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NOTICE

Attached are revised and additional sections of the TALENT/KEYHOLE Supplement, Evaluation of Evidence on Soviet Guided Missile Production, a continuing report of the Production Working Group of the Guided Missiles and Astronautics Intelligence Committee. These should be inserted in alphabetical order by location in the looseleaf binder of this publication.

[redacted]

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INTRODUCTION

This report is a photographic supplement to a continuing report of the Production Working Group of the Guided Missiles and Astronautics Intelligence Committee (GMAIC).* This supplement was first published in October 1963 and contained evaluations of the various installations made by the Production Working Group in August 1963. Following initial publication, various sections of this supplement have been revised from time to time, and new sections of this supplement have been added. The date of the latest evaluation of each installation is shown on the upper corner of each page.

The supplement is designed to present physical information on key facilities engaged in some way in the Soviet missile production program. While the emphasis is on ballistic missile production, the report does contain some information on facilities that are probably engaged in production of air-to-surface and surface-to-air missiles. The format of the report allows for expansion as information becomes available, and future revisions will contain evidence on several more facilities engaged in the production of various types of missile systems.

This supplement is limited to photographic evidence on missile assembly and engine producers, rocket engine test facilities, and probable solid propellant production and test facilities on the assumption that, within the KEYHOLE photography to date, these are the only meaningful targets for review. As scale increases and photographic resolution improves, a better appreciation of the production of ground support equipment may be reflected in KEYHOLE photography and, in that case, evidence on the relevant facilities will be introduced.

Although the mission of the Production Working Group restricts its review to the Soviet program, this supplement contains sections on the

*GMAIC, PWG. *Evaluation of Evidence on Soviet Guided Missile Production*, October 1963 (TOP SECRET and recent revisions and addenda.

Chinese liquid fuel rocket test stands at Peiping and the probable solid propellants test facility at Tai-yuan. The purpose for this is twofold: 1) these facilities were undoubtedly designed by the Soviets, and analysis of the layout and construction of the facilities is therefore useful in analyzing Soviet test facilities, and 2) available large-scale photography of the Chinese test facilities should allow refinement in judgements on the Soviet facilities as noted in KEYHOLE material.

The format of this document is designed to present the missile-related facilities in several Soviet cities, provide the best photograph of each, and match this photograph with a line drawing which provides key measurements within the facility. Pagination has been devised to follow this purpose and to allow for subsequent expansion. Basically, the pagination is alphabetically by city. Each chapter on a city is broken into numbered sections on the facilities within the city, beginning with Section 0. For example, Krasnoyarsk has three facilities of missile interest covered in this supplement; therefore, the material related to Krasnoyarsk is broken into sections as follows:

	Section
City of Krasnoyarsk	0
Armaments Plant No 4	1
Rocket Engine Test Facility	2
Probable Solid Propellants Test Facility	3

Within each section, the section number precedes each page number (e.g. 0-1, 0-2, 0-3, etc). Throughout each chapter the name of the city precedes the section-page number.

Revisions of this supplement will follow as required by new photographic material or analysis of other information.

November 1964

BIYSK

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November 1964

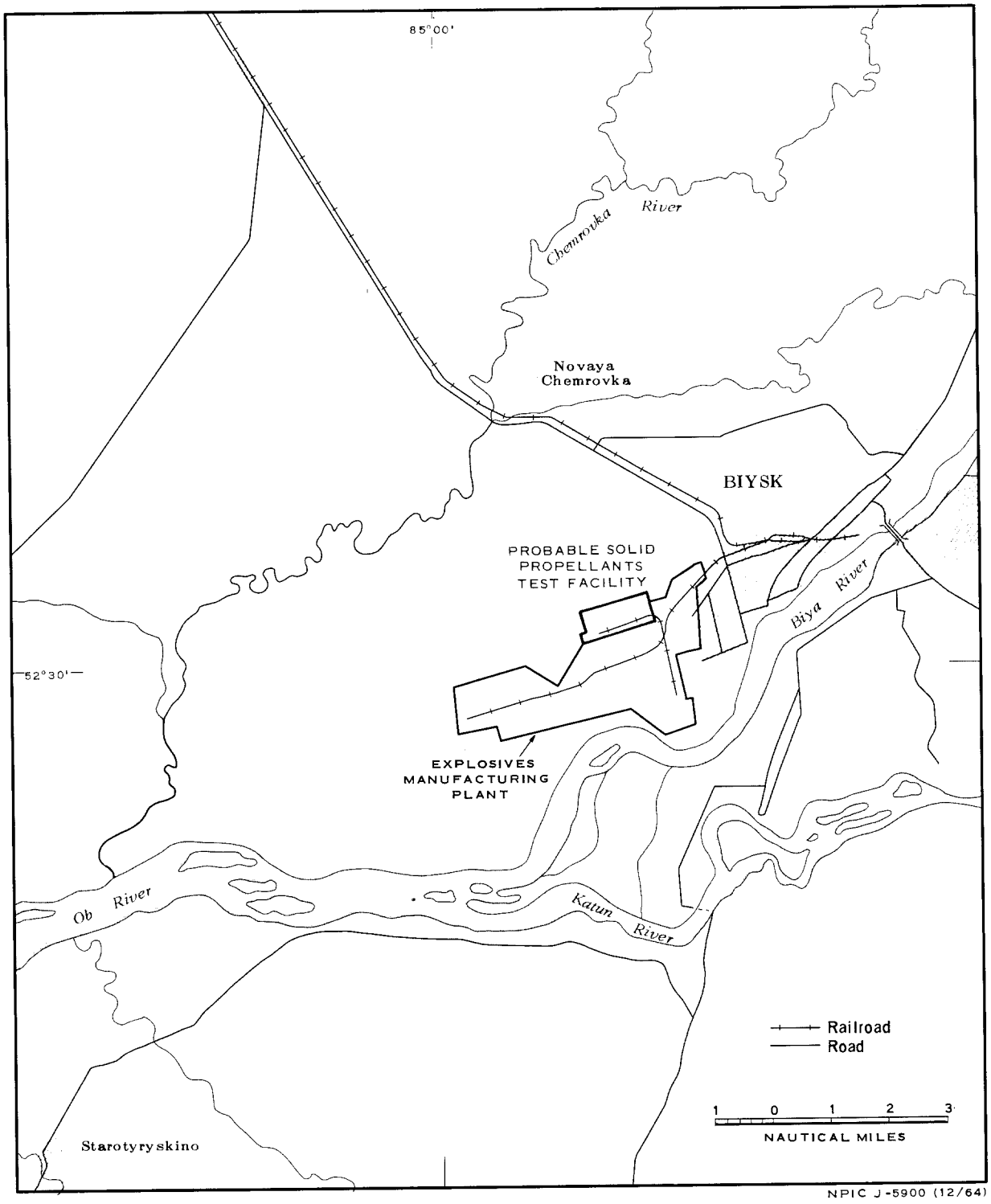

FIGURE 1. USSR: CITY OF BIYSK.

Biysk 0-2

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25X1
25X1

November 1964

FIGURE 2. USSR: CITY OF BIYSK

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25X1

November 1964

BIYSK: PROBABLE SOLID PROPELLANTS TEST FACILITY

PHOTOGRAPHIC CHRONOLOGY

This facility, which is associated with the Biysk Explosives Manufacturing Plant, was first seen on poor-quality KEYHOLE photography of , at which time it was in an early stage of development. The H-shaped building was under construction, and work had possibly started on Test Cells 1 and 2 (Figure 2). permitted confirmation of the identification of Test Cell 2, showed that Test Cell 1 was still under construction, and revealed that the H-shaped building had been completed. This photography also revealed a new secured area in an early stage of construction 8,755 feet northwest of the test facility; this new area was identified at that time as a possible burn area. Later coverage in was of poor quality, and no changes were discernible. However, was excellent; by that time, Test Cell 1 had been completed, four large and four small support buildings had been constructed, and four possible tanks were seen just west of the test facility.

The only usable photography of the facility obtained in 1963 was This photography revealed a group of three offset buildings that had been constructed 4,200 feet east of the facility. A building was observed in the possible burn area, and activity west of Test Cell 1 was identified as a probable test cell under construction.

Photography of revealed a second group of offset buildings east of the test facility. photography revealed no apparent change, but the good coverage of permitted significant new interpretations. Construction west of Test Cell 1 was now identified as a shell-testing tunnel range; the possible burn area northwest of the test facility was identified as a possible revetted, small, single test position, and the number of offset

buildings had increased to a total of 16 arranged in two groups of five and two groups of three buildings. Steam lines identified on this photography serve the two main test cells and the groups of offset buildings.

EVALUATION

Assessment of this facility is hampered by a complete lack of collateral intelligence as to its function. On the basis of photographic evidence alone the facility is judged to be a probable test facility for solid rocket propellants. While some testing could now be taking place, because of the lack of evidence of test firings and the continuation of construction, it appears that the facility is not yet fully operational.

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November 1964

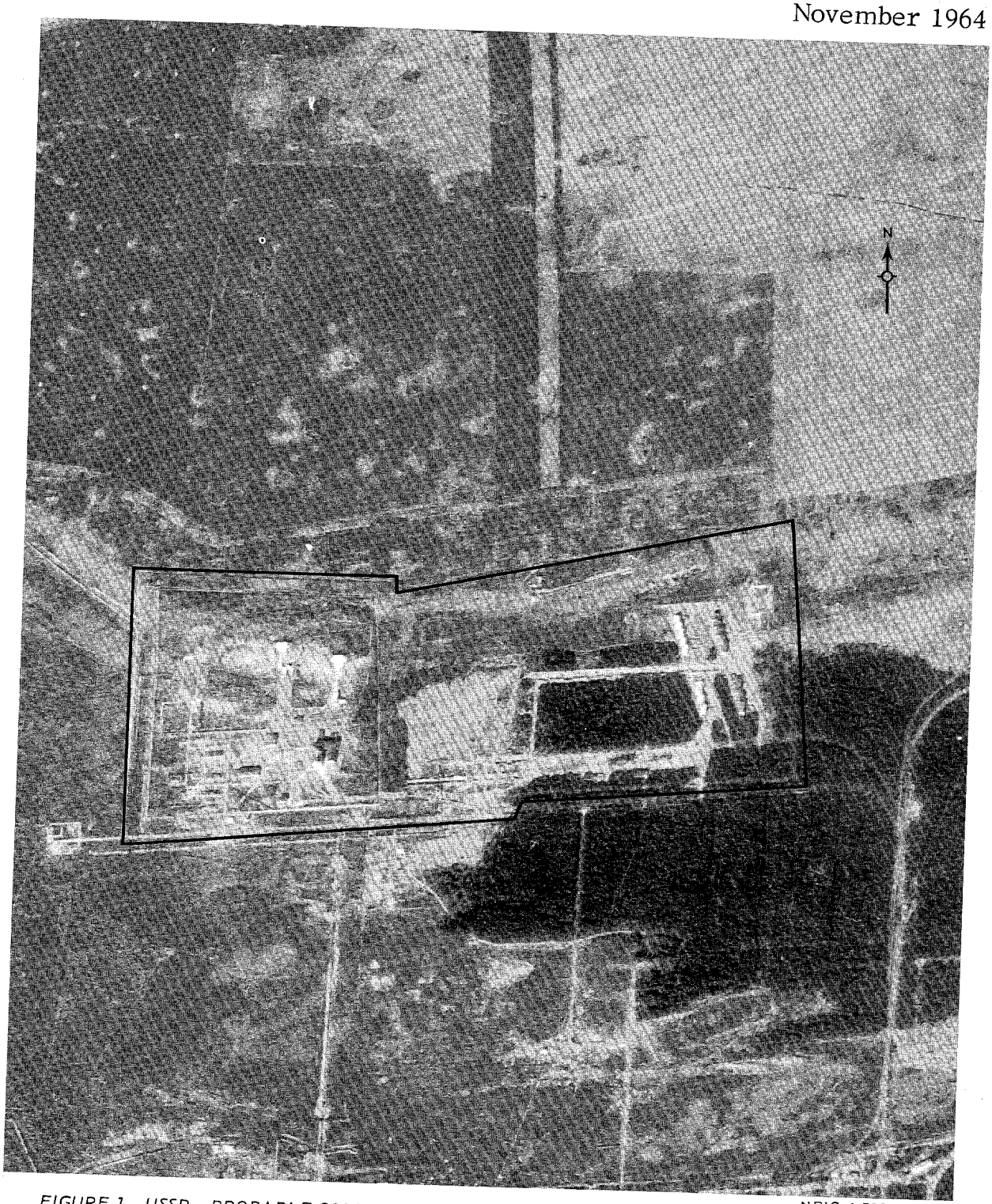


FIGURE 1, USSR: PROBABLE SOLID PROPELLANTS TEST FACILITY AT BIYSK (

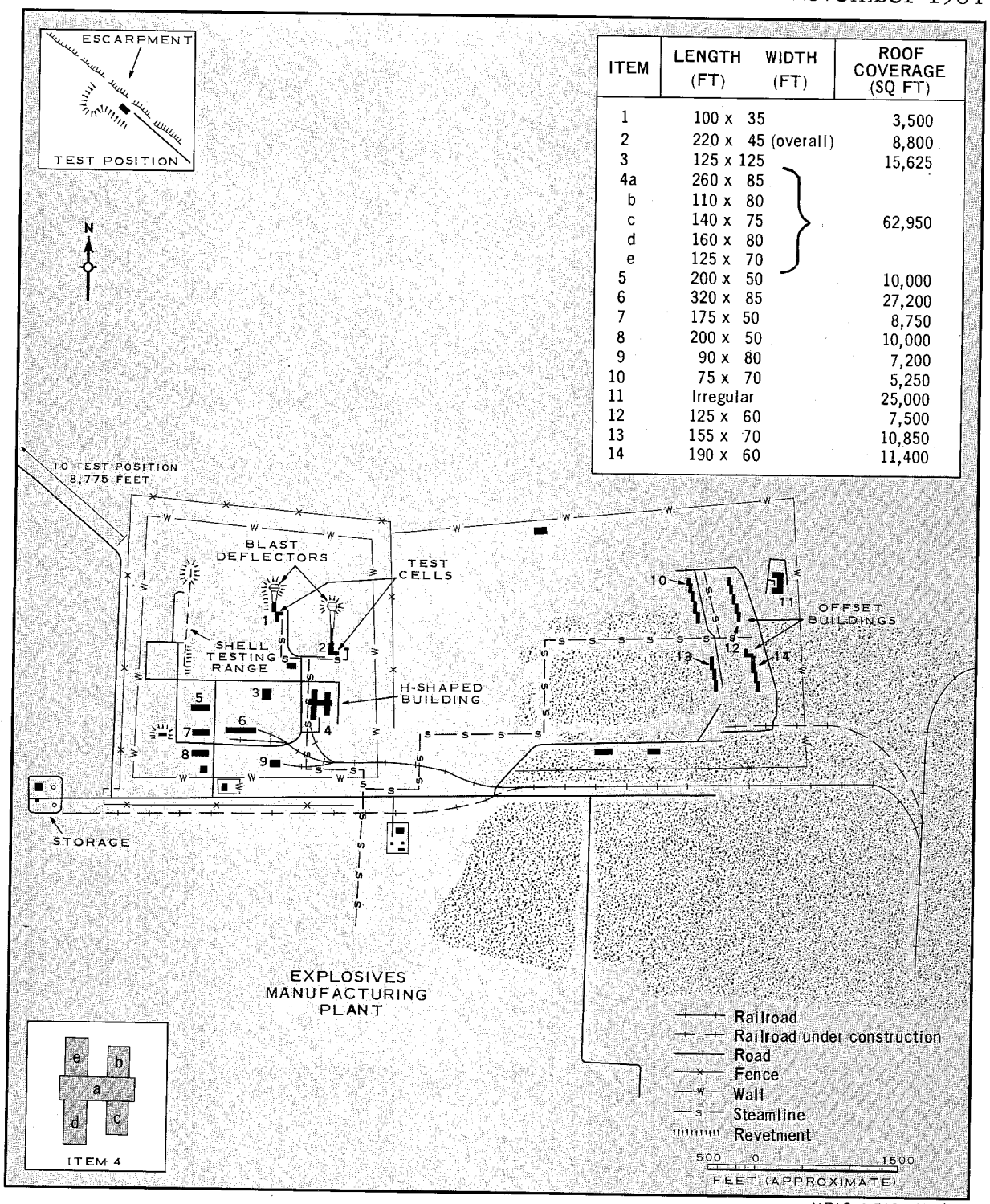
NPIC J-5902 (12/64)

25X1

Biysk 1-2

25X1

November 1964



ITEM	LENGTH (FT)	WIDTH (FT)	ROOF COVERAGE (SQ FT)
1	100 x 35		3,500
2	220 x 45 (overall)		8,800
3	125 x 125		15,625
4a	260 x 85		62,950
b	110 x 80		
c	140 x 75		
d	160 x 80		
e	125 x 70		
5	200 x 50		10,000
6	320 x 85		27,200
7	175 x 50		8,750
8	200 x 50		10,000
9	90 x 80		7,200
10	75 x 70		5,250
11	Irregular		25,000
12	125 x 60		7,500
13	155 x 70		10,850
14	190 x 60		11,400

NPIC J-5903 (12/64)

FIGURE 2. USSR: LAYOUT AND ROOF COVERAGE OF PROBABLE SOLID PROPELLANTS TEST FACILITY AT BIYSK.

Biysk 1-3

November 1964

KAMENSK-SHAKHTINSKIY

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25X1

November 1964

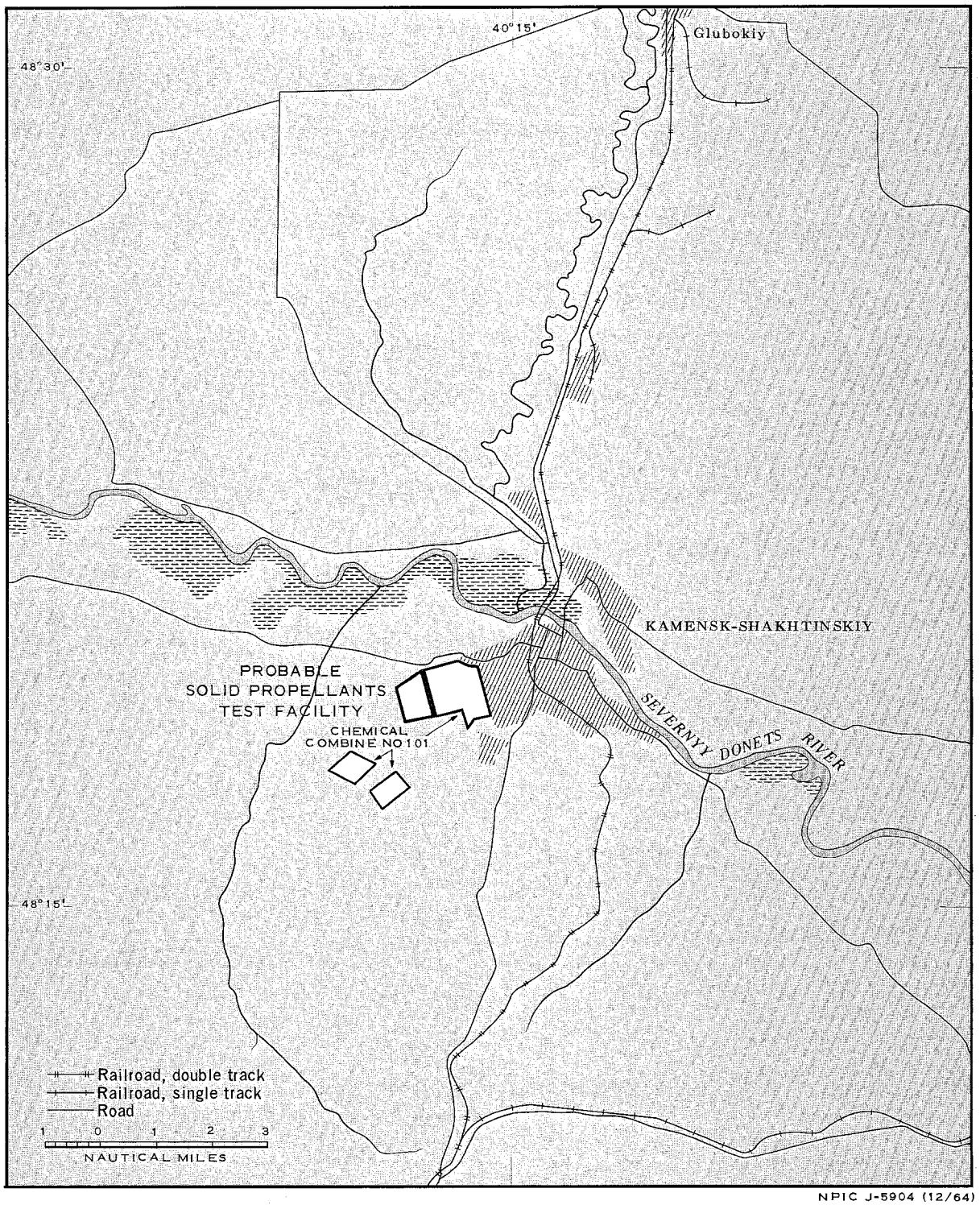

FIGURE 1. USSR: CITY OF KAMENSK-SHAKHTINSKIY.

Kamensk-Shakhtinskiy 0-2

25X1

25X1
25X1

November 1964

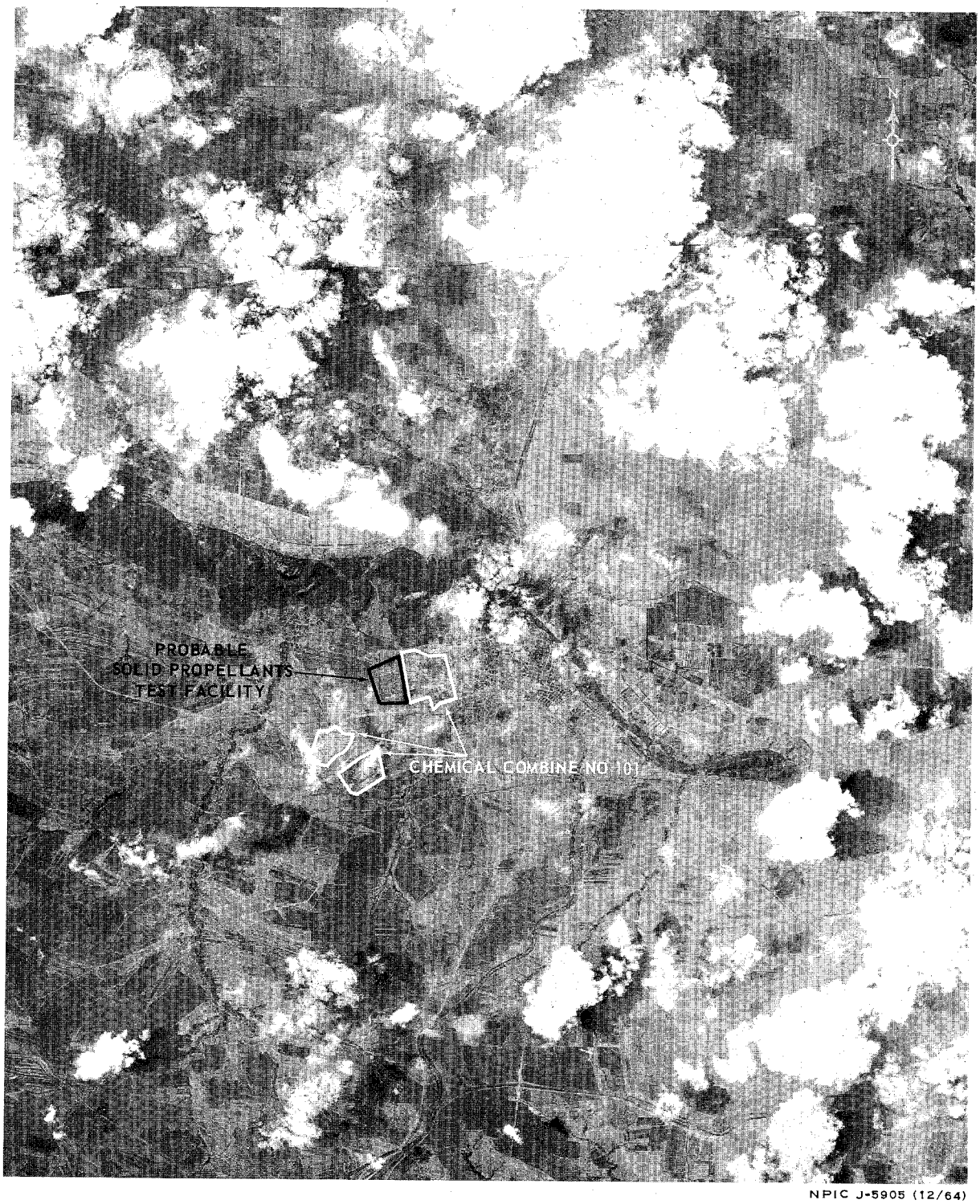

FIGURE 2. USSR: CITY OF KAMENSK-SHAKHTINSKIY

25X1

Kamensk-Shakhtinskiy 0-3

25X1

November 1964

KAMENSK-SHAKHTINSKIY: PROBABLE SOLID PROPELLANTS TEST FACILITY

PHOTOGRAPHIC CHRONOLOGY

This probable solid propellants test facility was not present on German photography of June 1942 or April 1943, although Chemical Combine No 101, of which the test facility is a part, was in existence at that time. It was first seen on KEYHOLE photography of [redacted] at which time the facility consisted of the test cell with its blast deflector, two large support/storage buildings, and two small, revetted storage buildings. The large, tall, rectangular structure, now considered a possible checkout building (item 10, Figure 2), made its appearance 700 feet northeast of the test cell in [redacted]. The next coverage was not until [redacted] by which time the group of five offset buildings and one support building had been added to the facility. The only change noted a year later, [redacted] was the presence of a faint blast mark on the test facility apron and the addition of one large rectangular building (item 9). No changes were observed on photography of [redacted]

EVALUATION

[redacted]

On the basis of photographic evidence alone the facility is judged to be a probable test facility for solid rocket propellants. While the blast mark indicates that limited testing could have been taking place since [redacted] the continuation of construction and the absence of features that have been constructed at the other solid propellant test facilities suggest that the facility is not yet fully operational.

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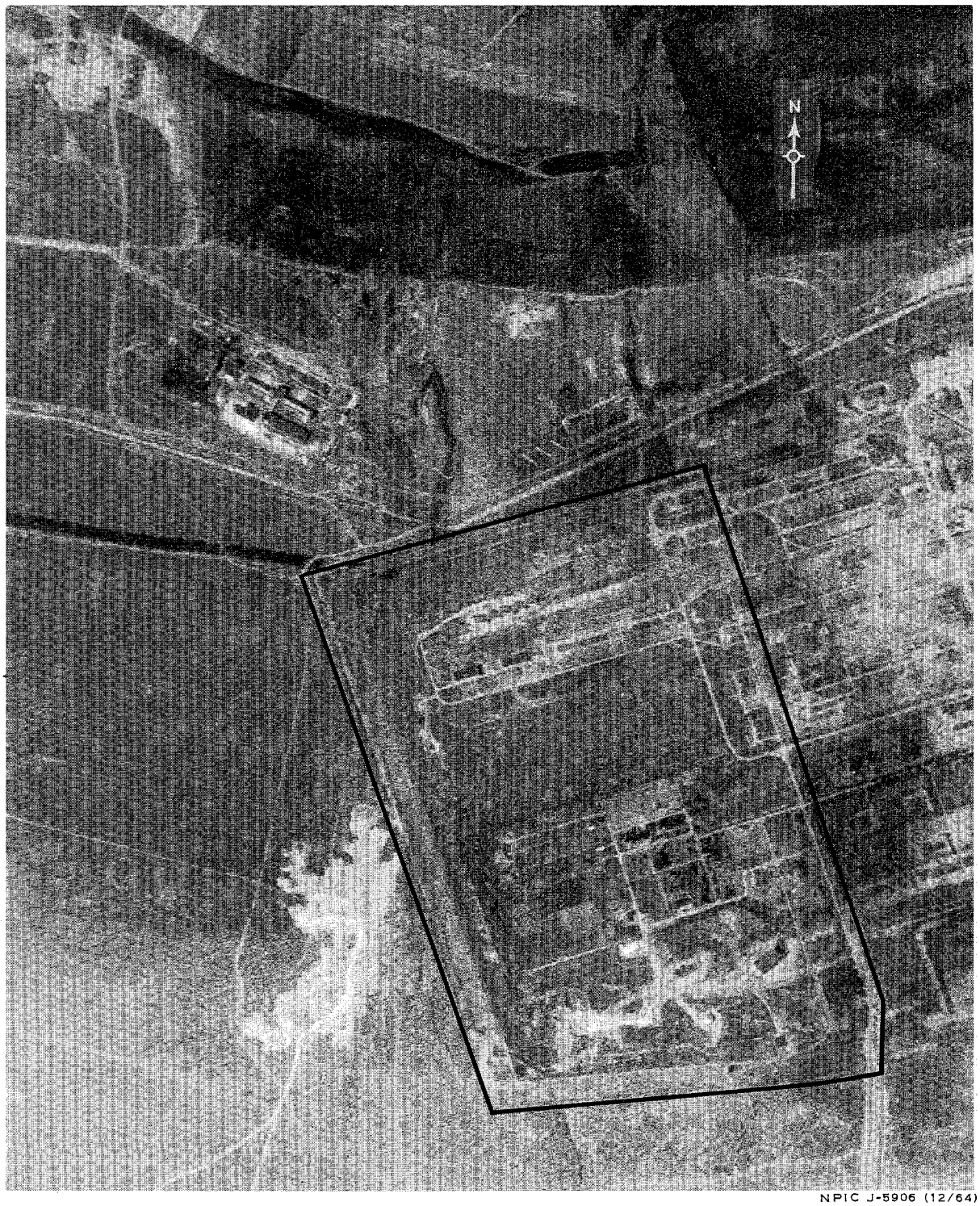
November 1964



NPIC J-5906 (12/64)

FIGURE 1. USSR: PROBABLE SOLID PROPELLANTS TEST FACILITY AT KAMENSK-SHAKHTINSKIY

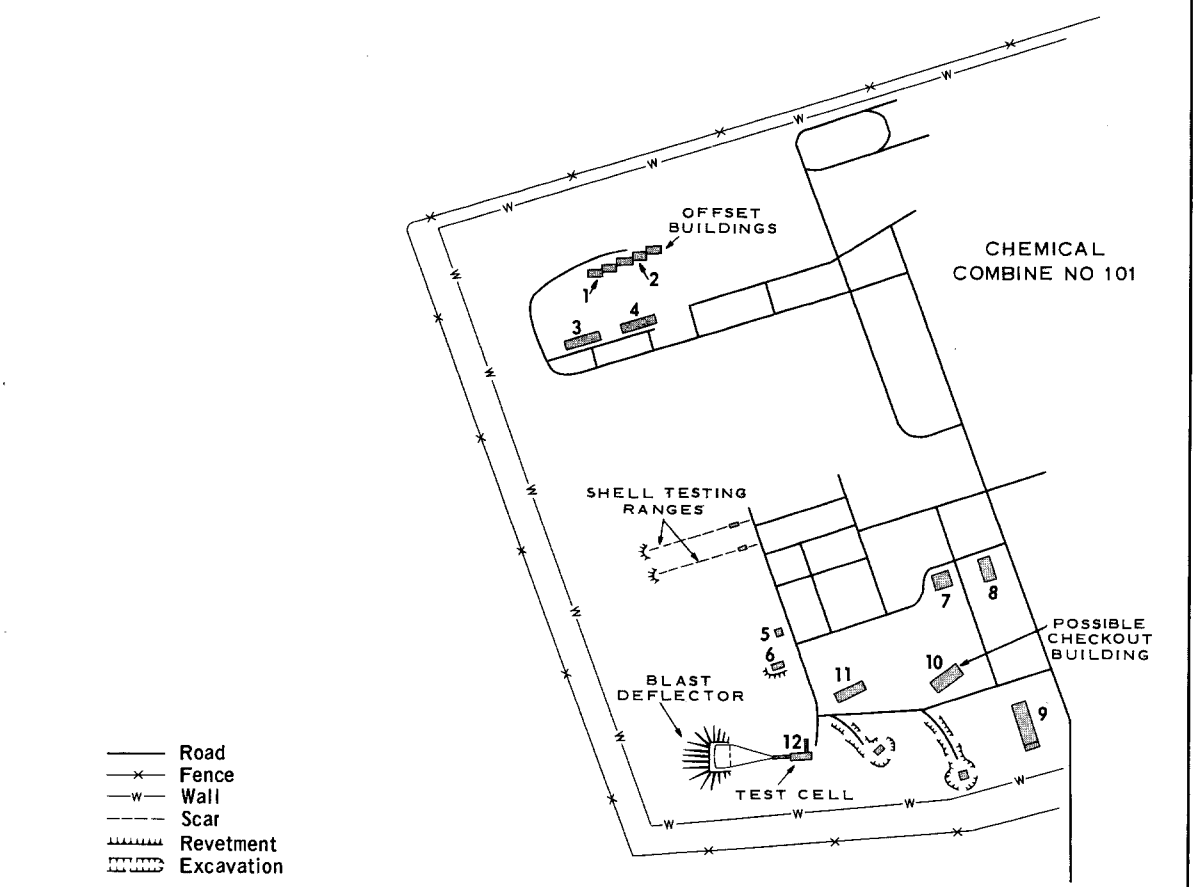
25X1

Kamensk-Shakhtinskiy 1-2

25X1

November 1964

ITEM	LENGTH (FT)	WIDTH (FT)	ROOF COVERAGE (SQ FT)
1	85 x 55		4,675
2	90 x 55		4,950
3	195 x 60		11,700
4	185 x 55		10,175
5	55 x 55		3,025
6	110 x 35		3,850
7	115 x 90		10,350
8	130 x 70		9,100
9	290 x 95		27,550
10	170 x 85 x 85h		14,450
11	110 x 60		6,600
12	225 x 40 (overall)		9,000



NPIC J-5907 (12/64)

FIGURE 2. USSR: LAYOUT AND ROOF COVERAGE OF PROBABLE SOLID PROPELLANTS TEST FACILITY NEAR KAMENSK-SHAKHTINSKIY.

Kamensk-Shakhtinskiy 1-3

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25X1

November 1964

KRASNOYARSK

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25X1

November 1964

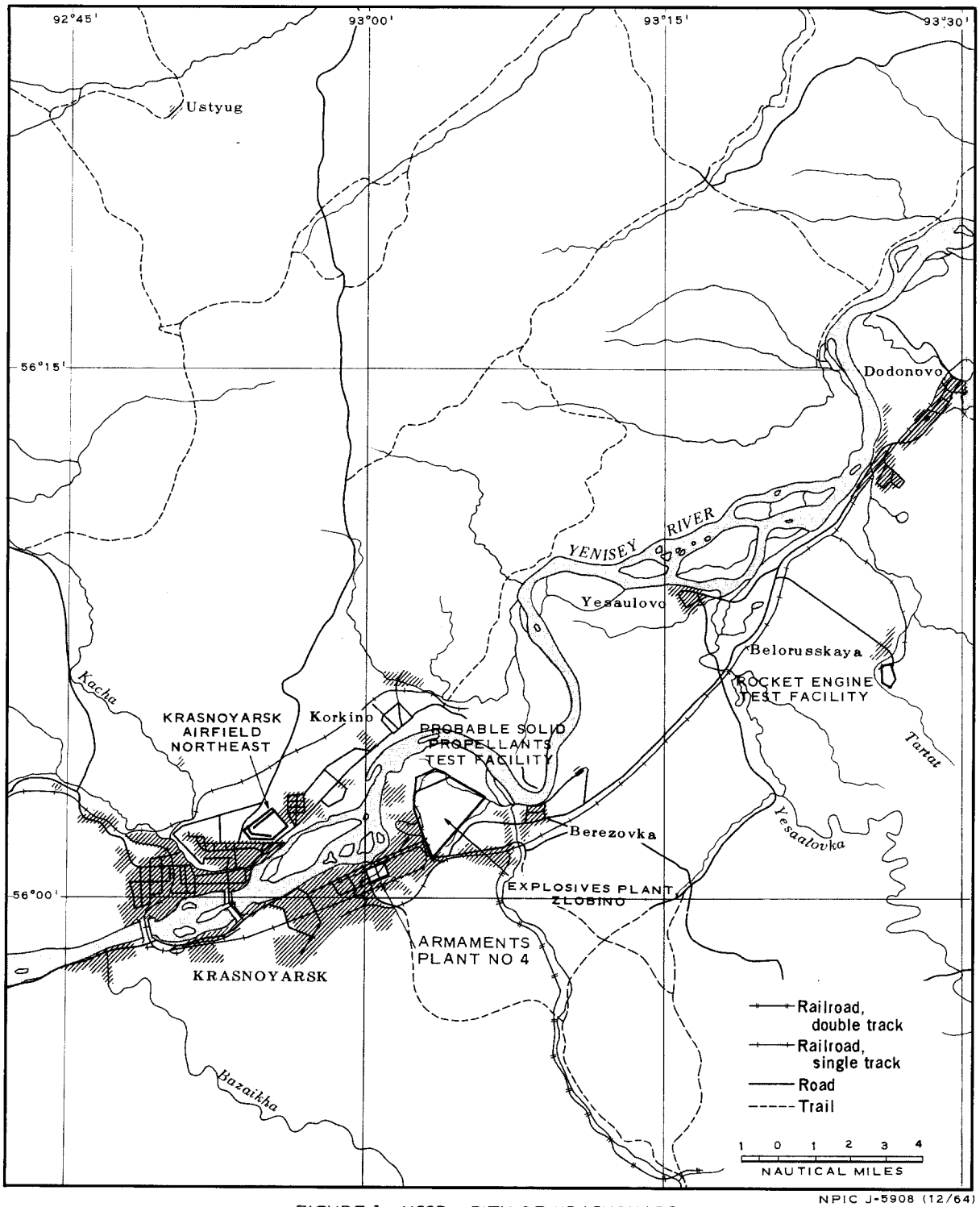

FIGURE 1. USSR: CITY OF KRASNOYARSK.

Krasnoyarsk 0-2

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25X1

25X1

November 1964

NPIC J-5909 (12/64)

FIGURE 2. USSR: CITY OF KRASNOYARSK

25X1

Krasnoyarsk 0-3

25X1

25X1

25X1

November 1964

KRASNOYARSK: ROCKET ENGINE TEST FACILITY

PHOTOGRAPHIC CHRONOLOGY

GENETRIX photography showed that no facility existed at this location in February 1956; however, some scarring was observed that may or may not have been directly related to construction of the facility. Although this facility was observed on photography of the poor resolution of that photography prevented identification, and it was first identified on photography of At that time the test stand was present and appeared complete, but some parts of the facility itself were still under construction.

25X1

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Twelve KH-4 KEYHOLE missions provided photographic coverage of the facility from An analysis of confirmed the installation as a rocket engine test facility and revealed several minor details. possible blast marks on the flame deflector were observed. In excellent nonstereo KH-7 photography of the facility revealed continuing construction activity, a possible horizontal rocket test facility, and many other previously unobserved components. This photography also indicated that the complex was being expanded.

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Subsequent KH-4 KEYHOLE photography through indicated that a second possible vertical test stand was under construction west of the checkout buildings (items 6 and 7, Figure 2); the foundations for this possible stand were noted in No other significant details were observed during this period.

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EVALUATION

Photography provides the principal information on this facility. Allowing for a two-year construction period following GENETRIX photography,

25X1

the facility could not have been operational before 1958. However, continuing construction noted during 1961 supports a conclusion that construction probably began in the 1958-59 period with 1961 a most likely operational date. Scale of the photography precludes determination of the type of missile or engine testing at this facility. (See Armaments Plant No 4 under Krasnoyarsk, Section 1, page 1.)

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FIGURE 1. USSR: ROCKET ENGINE TEST FACILITY NEAR KRASNOYARSK

25X1

Krasnoyarsk 2-2

25X1

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25X1

November 1964

ITEM	LENGTH (FT)	WIDTH (FT)	ROOF COVERAGE (SQ FT)
1	80 x	75 x 105h*	6,000
2	72 x	50	3,600
3	65 x	25	1,625
4	70 x	40	2,800
5	65 x	40	2,600
6	130 x	55	7,150
7	200 x	115	23,000
8	320 x	95 x 45h	30,400
9	165 x	60	9,900
10	40 x	30	1,200
11	50 x	50	2,500
12	Irregular		10,170
13	125 x	20	2,500
14	100 x	55	5,500
15	Irregular		12,050
16	100 x	40	4,000
17	200 x	45	9,000
18	365 x	85	31,025
19	195 x	50	9,750
20	Various		
21	215 x	50	10,750
22	85 x	45	3,825
23	80 x	40	3,200
24	Irregular		12,900
25	Irregular		3,800
26	200 x	85 x 40h	17,000
27	Irregular		13,700
28	95 x	50	4,750
29	175 x	65	11,375
30	100 x	50	5,000

*Height of superstructure

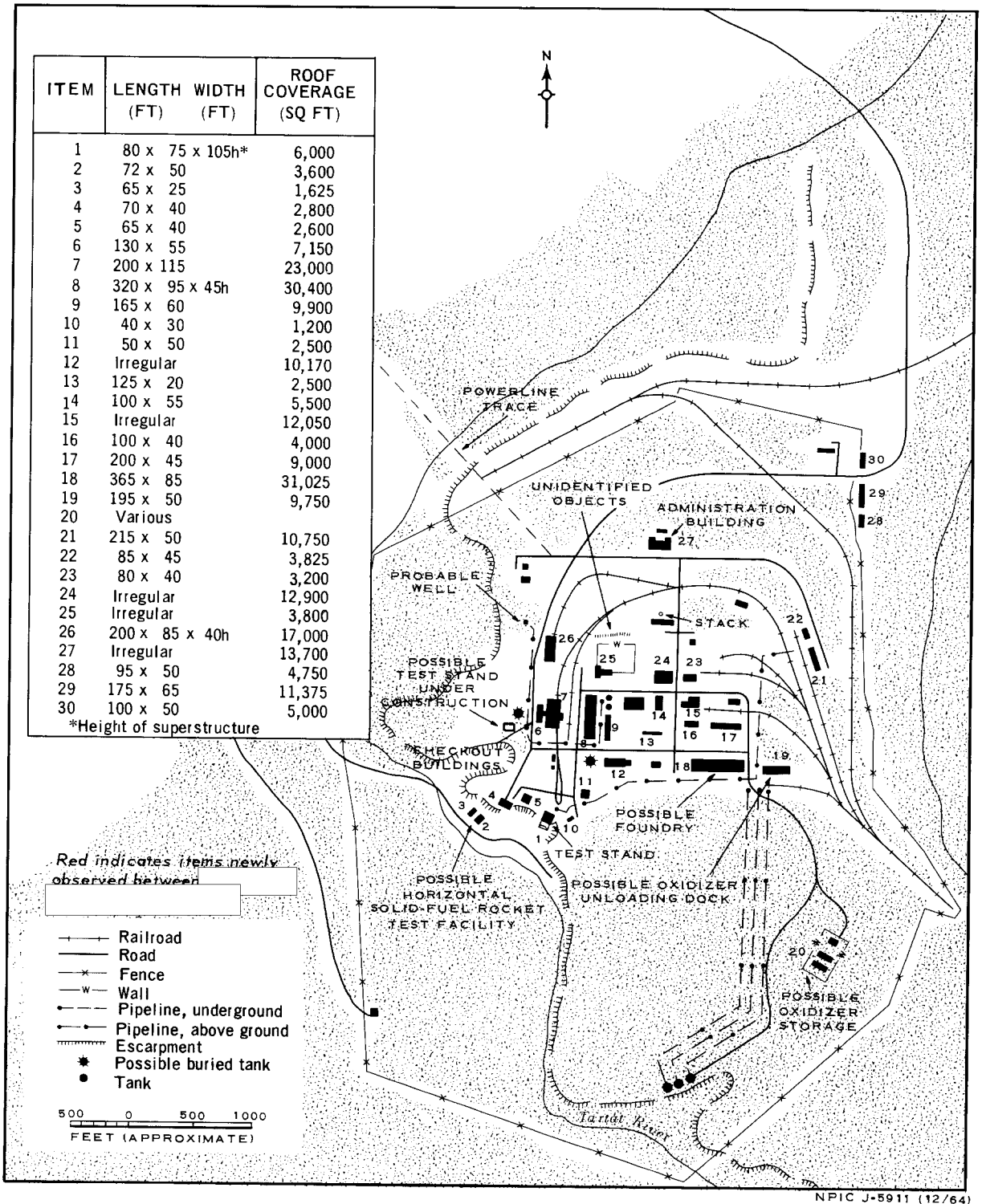

FIGURE 2. USSR: LAYOUT AND ROOF COVERAGE OF ROCKET ENGINE TEST FACILITY NEAR KRASNOYARSK.

25X1

25X1

Krasnoyarsk 2-3

25X1

November 1964

KRASNOYARSK: PROBABLE SOLID PROPELLANTS TEST FACILITY

PHOTOGRAPHIC CHRONOLOGY

Although it cannot be precisely determined when construction on this test facility began, it was believed to be in an early or mid stage of construction when first seen on [redacted] This test facility is adjacent to the Krasnoyarsk Explosives Plant, Zlobino (Plant No 580). In [redacted] the blast deflector of Test Cell 2 was under construction, two wings of the H-shaped building were complete, and three support buildings were present. By [redacted] Test Cell 2 had been completed, and four sections of the H-shaped building could be discerned.

[redacted] revealed that Test Cell 1 and the H-shaped building had been completed and that one support building had been added. No changes were observed in [redacted] The test area appeared to be essentially completed in [redacted]

No further coverage was obtained until [redacted] when an additional support building was identified. [redacted] photography [redacted] of the facility was poor and contributed no new information. However, [redacted] revealed a group of three offset buildings (item 7, Figure 2). A second group of offset buildings (item 6) was seen in [redacted] the second group was nearly complete, and at that time one, possibly two, revetted buildings and two other small buildings were observed outside the wall surrounding the test site. By [redacted] both groups of offset buildings were apparently complete, and a possible steam line serving both groups was visible.

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EVALUATION

Assessment of this facility is hampered by a complete lack of collateral intelligence as to its function. On the basis of photographic evidence alone the facility is judged to be a probable test facility for solid rocket propellants. While some testing could now be taking place, because of the lack of evidence of test firings, and the continuation of construction, it appears that the facility is not yet fully operational.

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FIGURE 1. USSR: PROBABLE SOLID PROPELLANTS TEST FACILITY NEAR KRASNOYARSK

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Krasnoyarsk 3-2

25X1

25X1
25X1

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ITEM	LENGTH (FT)	WIDTH (FT)	ROOF COVERAGE (SQ FT)
1	220 x 50 (overall)		9,400
2	100 x 35		3,500
3 a	265 x 75		
b	90 x 75		
c	145 x 80		58,675
d	160 x 75 x 80 h		
e	130 x 75		
4	Irregular		13,000
5	230 x 85		19,550
6	70 x 55		3,750
7	150 x 55		8,250

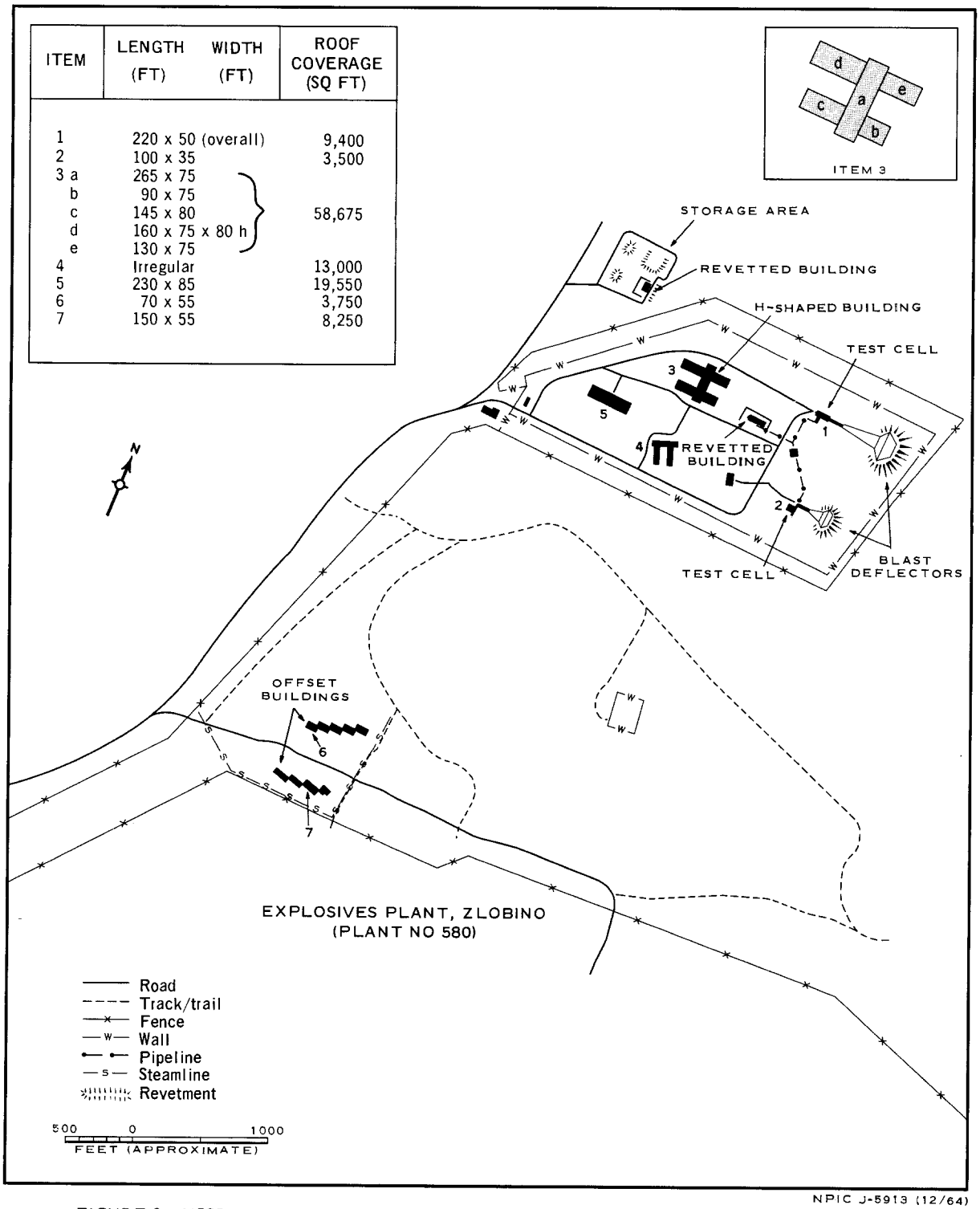

FIGURE 2. USSR: LAYOUT AND ROOF COVERAGE OF PROBABLE SOLID PROPELLANTS TEST FACILITY NEAR KRASNOYARSK.

Krasnoyarsk 3-3

25X1

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KUYBYSHEV: AIRCRAFT ENGINE PLANT NO 24

PHOTOGRAPHIC CHRONOLOGY

The Germans obtained excellent photographic coverage of Aircraft Engine Plant No 24 in 1942 Many of the buildings observed on the World War II photography were still present when excellent TALENT coverage was obtained in although several additions and modifications could be discerned. KEYHOLE photography of revealed a large fabrication/assembly building (item 20, Figure 2) under construction. This building, which was nearly complete when seen on photography of , was built in an L shape around an unidentified structure that had been seen on the 1959 TALENT photography. On the next usable photography of the plant, that of this building appeared to be complete, but construction continued for the next three months (August through October 1963) during which the building assumed a rectangular shape, indicating that the unidentified structure had been either razed or enclosed within the building. Photography of has revealed a new possible machine shop (item 21) which, on the July photography, appeared to be in the final stages of construction.

Additions to the plant since including the possible machine shop, completion of the final section of the fabrication/assembly building, and minor construction, provided the plant with additional roof cover Two of the eight aircraft engine test cells were lengthened and five of these had covers placed over the exhaust vents. These alterations were continuing when last observed.

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EVALUATION

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Recent photographic evidence on changes to the jet test cells appears to corroborate this report.

The quality of photography to date precludes a final determination of plant activity; however, observations on KEYHOLE photography neither confirm nor deny rocket engine production.

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FIGURE 1. USSR: AIRCRAFT ENGINE PLANT NO 24 AT KUYBYSHEV

25X1

25X1

25X1

25X1

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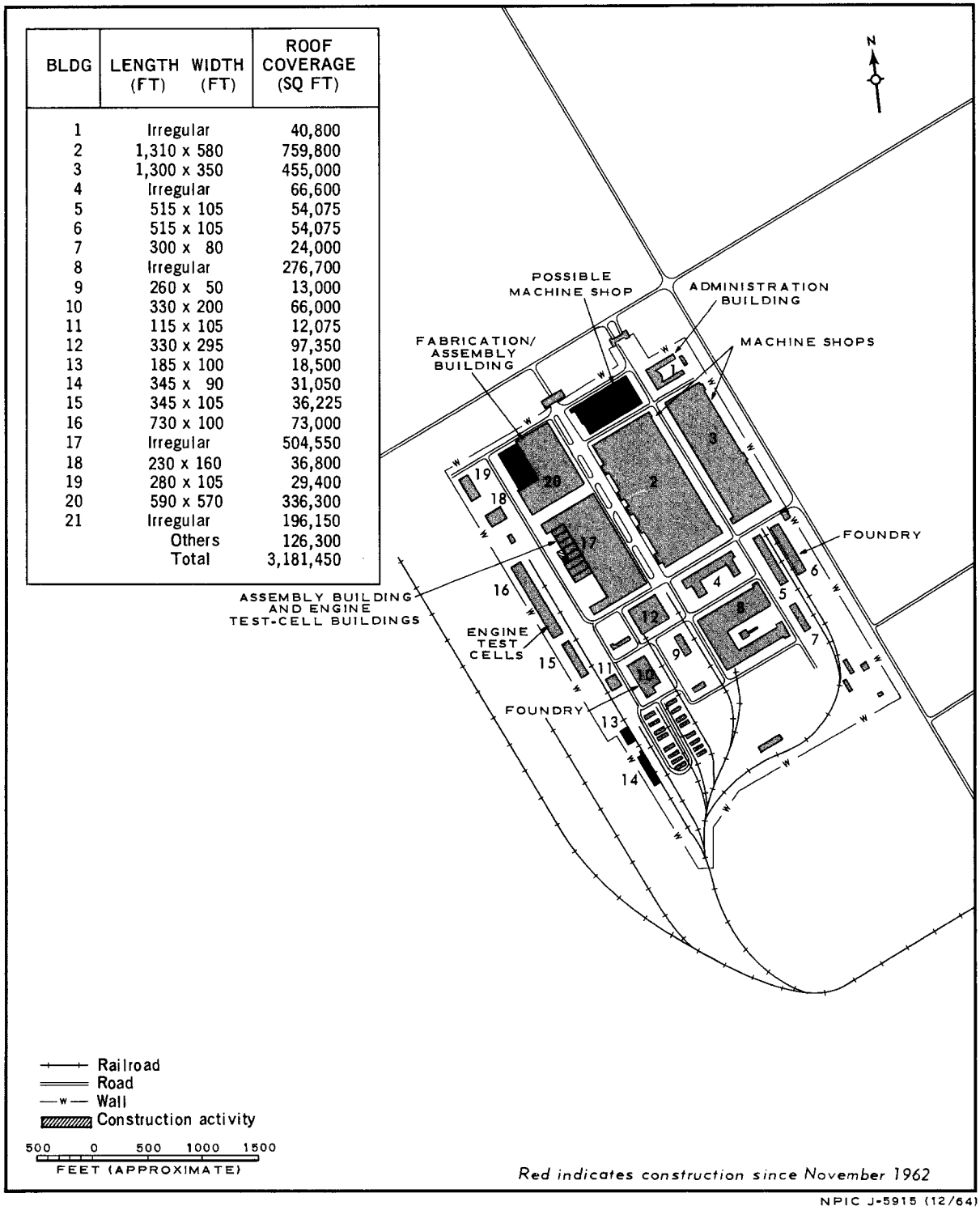
BLDG	LENGTH (FT)	WIDTH (FT)	ROOF COVERAGE (SQ FT)
1	Irregular		40,800
2	1,310	x 580	759,800
3	1,300	x 350	455,000
4	Irregular		66,600
5	515	x 105	54,075
6	515	x 105	54,075
7	300	x 80	24,000
8	Irregular		276,700
9	260	x 50	13,000
10	330	x 200	66,000
11	115	x 105	12,075
12	330	x 295	97,350
13	185	x 100	18,500
14	345	x 90	31,050
15	345	x 105	36,225
16	730	x 100	73,000
17	Irregular		504,550
18	230	x 160	36,800
19	280	x 105	29,400
20	590	x 570	336,300
21	Irregular		196,150
	Others		126,300
	Total		3,181,450



NPIC J-5915 (12/64)

FIGURE 2. USSR: LAYOUT AND ROOF COVERAGE OF AIRCRAFT ENGINE PLANT NO 24 AT KUYBYSHEV.

Kuybyshev 2-3

25X1

25X1

25X1

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MOSCOW

	Section
City of Moscow	0
Missile Development Plant No 88, Kaliningrad	1
55-55N 37-48E;	25X1
Special Design Bureau (OKB)/Plant No 456, Khimki	2
55-54N 37-48E;	25X1
Zagorsk Rocket Engine Test Facility, Krasnozavodsk	3
56-27N 38-12E;	25X1
Guided Missile R & D Plant No 301, Khimki	4
55-54N 37-26E;	25X1

25X1

25X1

25X1

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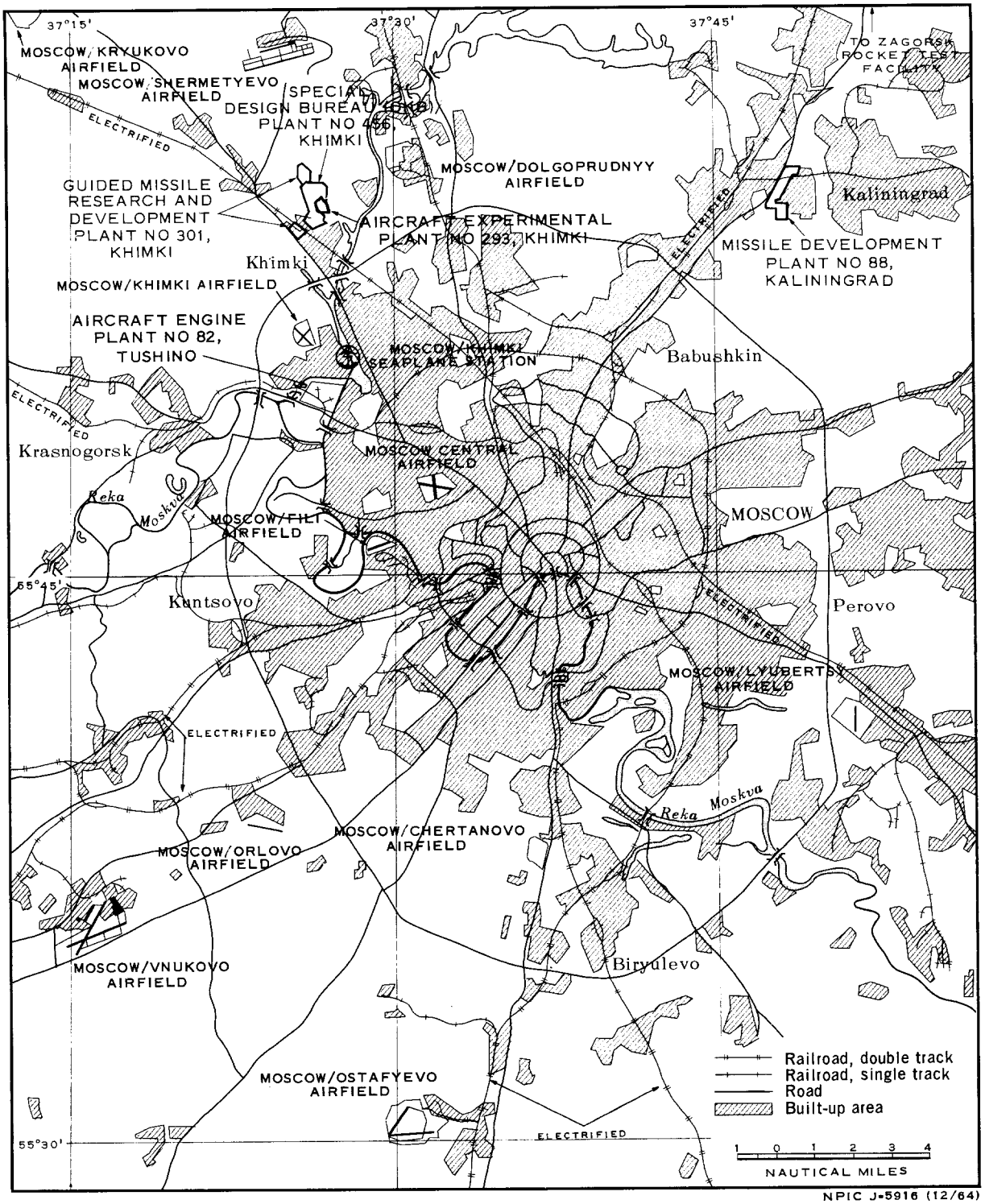

FIGURE 1. USSR: CITY OF MOSCOW.

Moscow 0-2

25X1

25X1
25X1

November 1964

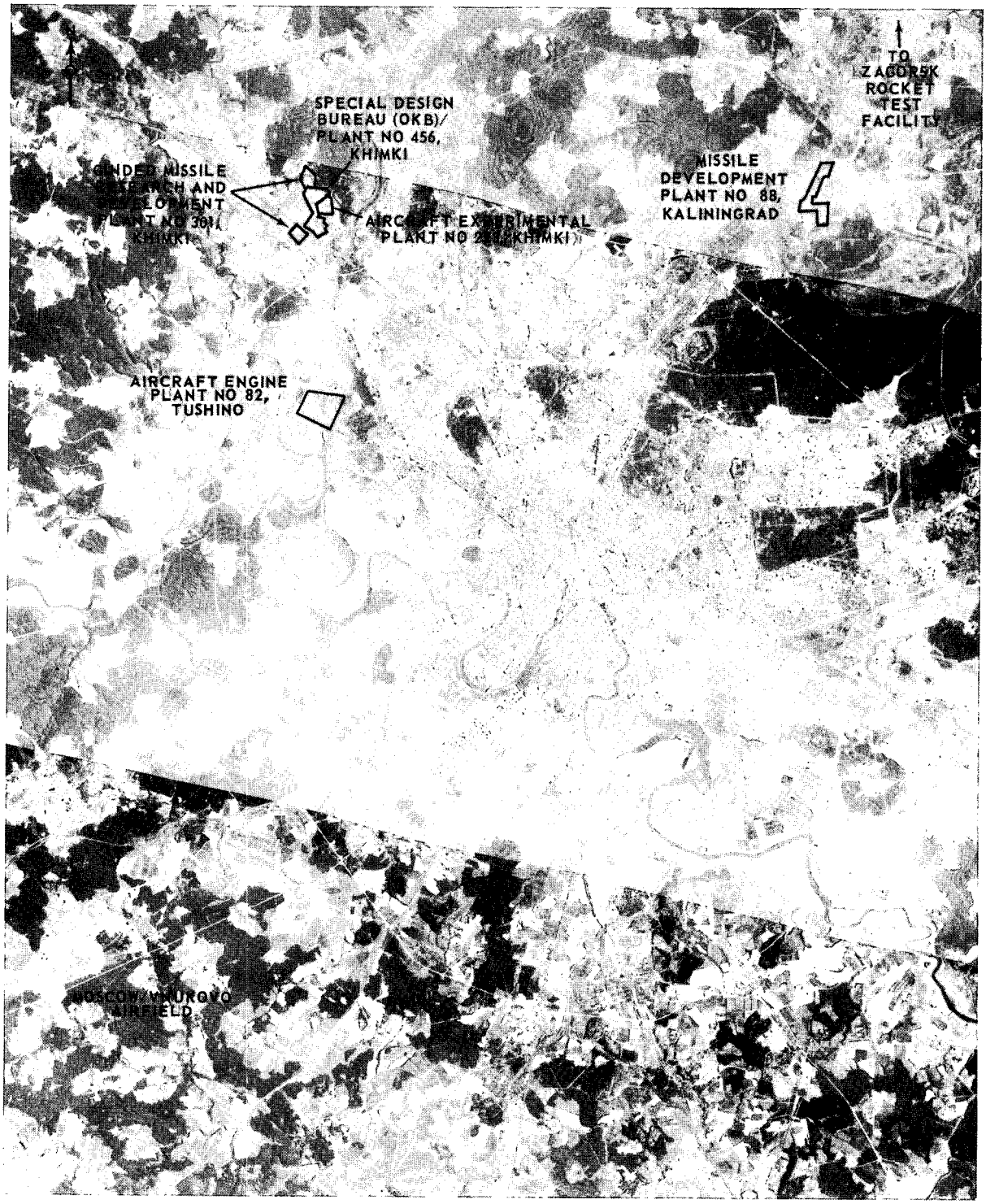

FIGURE 2. USSR: CITY OF MOSCOW

NPIC J-5917 (12/64)

25X1

25X1

November 1964

MOSCOW: MISSILE DEVELOPMENT PLANT NO 88, KALININGRAD

PHOTOGRAPHIC CHRONOLOGY

The plant area appears on captured German 1942 photography. Coverage of provided the first usable KEYHOLE photography of the installation; however, the first good-quality KEYHOLE photography was obtained in This 1964 photography confirmed the general layout of the plant area that had been derived from ground photography of the 1950s. Expansion of the plant since 1962 has occurred in the area occupied by Scientific Research Institute No 88 (Post Box 989) which is the site of the former Moscow/ Kaliningrad Airfield (Figure 2). Especially notable has been the addition of a large building (item 33) at the southern extremity of the plant. This area is still undergoing expansion. Photography of shows a construction area, ditching, and a building (item 32, Figure 2) which was completed during the period. No vertical test stands have been identified within the plant area.

EVALUATION

Missile Development Plant No 88, Kaliningrad, Moscow Oblast, is a major center in the USSR for research and development of surface-to-surface ballistic missiles. It is also engaged in the development of space capsules.

In addition to its early role in the development of the short-range ballistic missiles, this plant is believed to have developed the SS-2, SS-3, SS-6, and SS-8. Development of the SS-1, SS-4, SS-5, and SS-7 is attributed to another design team which is probably located at, or associated with, Dnepropetrovsk.* There is some evidence, based on flight activity,

*See Dnepropetrovsk, section 5, DMDPC Test Facility.

25X1
25X1

which may be interpreted as indicating that Plant No 88 has shown an interest in the SS-5 and possibly the SS-7 as well as the more recent SS-9 and SS-10.

Collateral evidence indicates that by 1956 Plant No 88 had the capability to develop and manufacture very large vehicles. Testing of rocket engines was recorded in the area at a relatively high rate during the 1950s but is no longer reported on a routine basis; consequently, it is not known whether or not this facility still has a capability to test fire rocket engines.

Continual expansion of the facility in the Scientific Research Institute area since 1960 may be related to new missile and space programs.

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25X1

25X1

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FIGURE 1. USSR: MISSILE DEVELOPMENT PLANT NO 88, KALININGRAD

25X1

Moscow 1-2

25X1

25X1

25X1

November 1964

ITEM	LENGTH (FT)*	WIDTH (FT)*	ROOF COVERAGE (SQ FT)
1	Irregular		58,600
2	310 x 125		38,700
3	480 x 415		199,200
4	Irregular		31,600
5	205 x 115		23,000
6	Irregular		42,300
7	490 x 170		70,400
8	335 x 205		68,700
9	1,090 x 435 x 150h**		458,100
10	980 x 100		74,100
11	310 x 150		31,400
12	240 x 90		21,600
13	390 x 210		77,100
14	890 x 425		365,600
15	515 x 70		36,000
16	Irregular		55,100
17	400 x 65		26,000
18	290 x 75		21,700
19	380 x 70		26,600
20	250 x 160		47,500
21	230 x 110		25,300
22	200 x 110		22,000
23	415 x 200		60,700
24	Irregular		36,000
25	705 x 110		77,600
26	200 x 110		22,000
27	390 x 65		25,400
28	410 x 65		26,600
29	725 x 175		105,300
30	310 x 140		40,700
31	630 x 300		189,000
32	Irregular		52,900
33	350 x 335		116,200
	Others		757,000
	Total		3,330,000

*Overall dimension
**Estimated maximum height

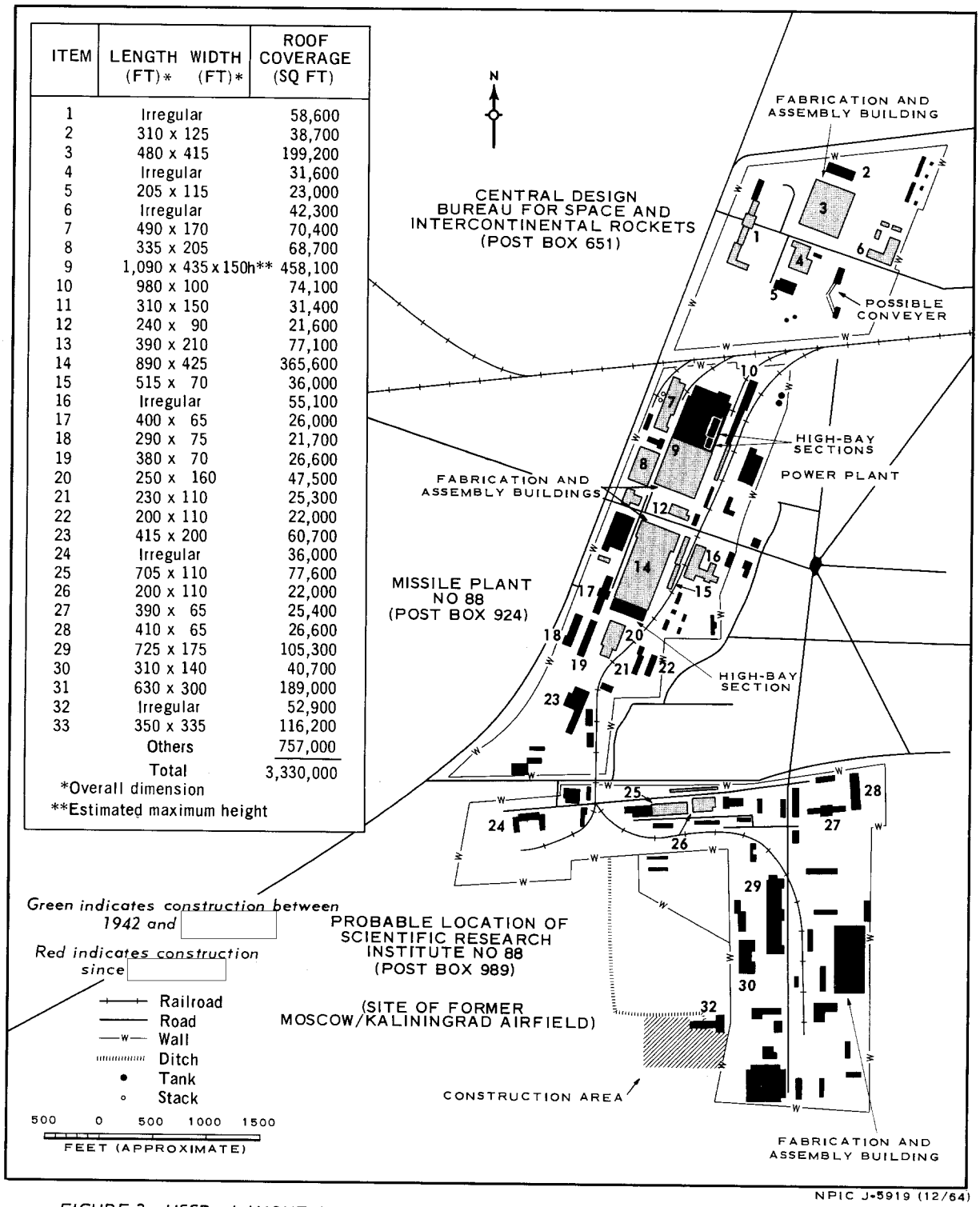


FIGURE 2. USSR: LAYOUT AND ROOF COVERAGE OF MISSILE DEVELOPMENT PLANT NO 88, KALININGRAD.

Moscow 1-3

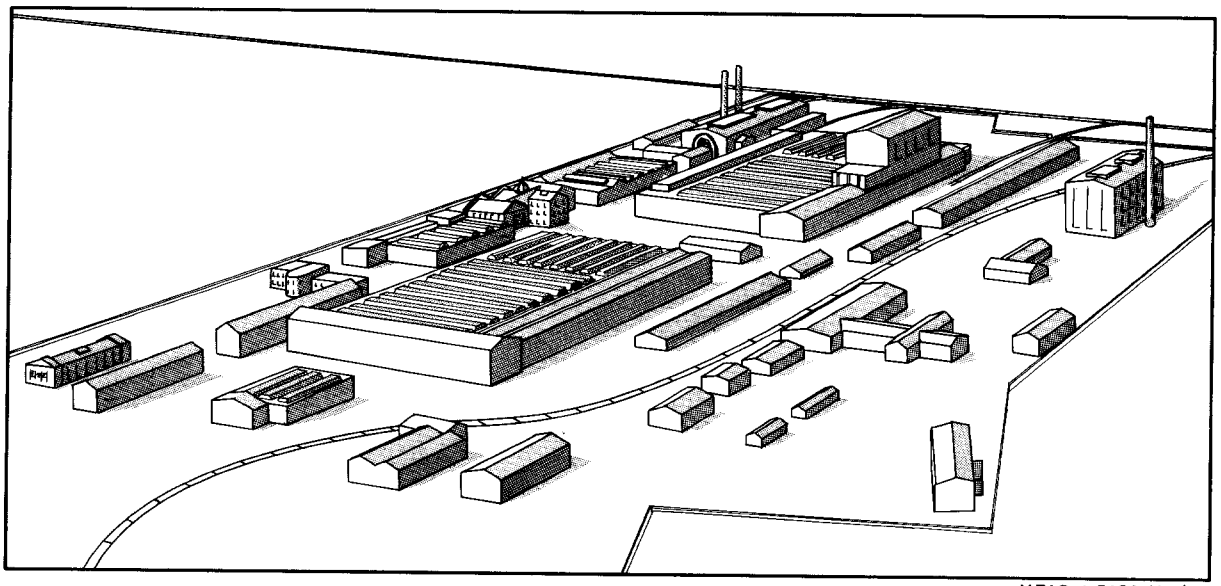
25X1

25X1

25X1

25X1
25X1

November 1964



NPIC J-5920 (12/64)

FIGURE 3. USSR: PERSPECTIVE VIEW OF MISSILE DEVELOPMENT PLANT NO 88 (POST BOX 924), KALININGRAD.

25X1

November 1964

MOSCOW: SPECIAL DESIGN BUREAU (OKB)/PLANT NO 456, KHIMKI

PHOTOGRAPHIC CHRONOLOGY

The installation, consisting of a plant area and a test area, appears on 1943-44 captured German photography. The first usable KEYHOLE photography of this plant was obtained in [redacted] Photography of [redacted] is of sufficiently high quality to confirm the presence of the test area and the general layout of the plant area reported by collateral sources through the mid-1950s. Details of the test area could first be identified on photography of [redacted] The test area contains three vertical test stands and one possible vertical test stand, all probably present in 1962. No changes are revealed on the high-quality photography obtained from [redacted].

A new building area, first seen under construction in 1962, on the site of the former Khimki Airfield North is possibly associated with Plant No 456, but there is presently no evidence of such an association. The external construction appeared to be complete in [redacted] A wall separates Plant No 456 from the new building area.

EVALUATION

Evidence concerning Special Design Bureau (OKB)/Plant No 456, Khimki, in Moscow (Figures 1 and 2) supports the conclusion that it is a major rocket engine research and development facility. It is very probable that the rocket engines utilized on some, if not all, Soviet ICBMs and other missiles were developed at this plant. At least three vertical test stands were reported at the test area of Plant No 456 by the mid-1950s.

Aircraft Experimental Plant No 293 lies between Plant No 456 and the rocket engine test area. Evidence through 1955 indicated that this plant was distinct from Plant No 456 and was engaged in rocket and jet

25X1

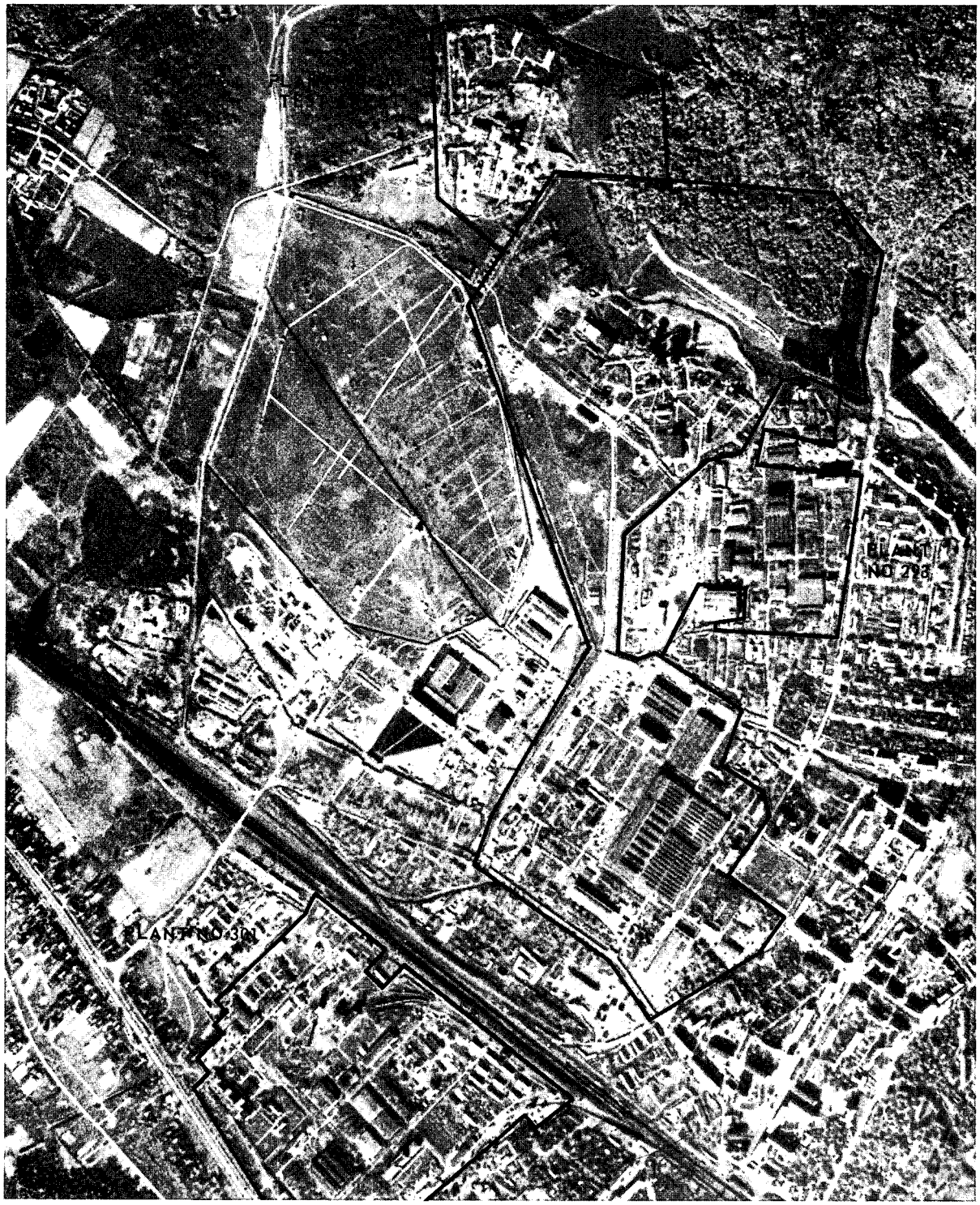
25X1

takeoff assist devices of an experimental nature. Current photography shows a wall separating the two facilities, and there is no photographic or collateral evidence indicating that Plant No 293 is a part of the Plant No 456 complex.

25X1

25X1
25X1

November 1964



NPIC J-5921 (12/64)

FIGURE 1. USSR: SPECIAL DESIGN BUREAU (OKB)/PLANT NO 456, KHIMKI

25X1
25X1

Moscow 2-2

25X1

25X1
25X1

November 1964

ITEM	LENGTH (FT)*	WIDTH (FT)*	ROOF COVERAGE (SQ FT)
	TEST AREA		
1	50 x	35	1,750
2	50 x	50**	2,500
3	50 x	50**	2,500
4	30 x	20	600
5	65 x	40	2,600
6	185 x	90	16,650
7	130 x	45	5,850
8	150 x	30	4,500
9	170 x	45	7,650
10	360 x	100	36,000
11	235 x	70	11,200
12	200 x	60	12,000
13	185 x	100	18,500
14	185 x	60	11,100
	OTHERS		31,600
	PLANT AREA		
15	680 x	60	40,800
16	375 x	210	78,750
17	275 x	80	22,000
18	310 x	90	27,900
19	185 x	85	15,725
20	210 x	80	16,800
21	465 x	275	127,875
22	240 x	110	20,400
23	920 x	765	675,275
24	465 x	80	37,200
25	260 x	90	23,400
26	180 x	70	12,600
27	205 x	65	10,775
28	560 x	175	98,000
29	IRREGUL	R	26,000
	OTHERS		31,500
	TOTAL		1,265,000

*Overall dimensions
**Tower only

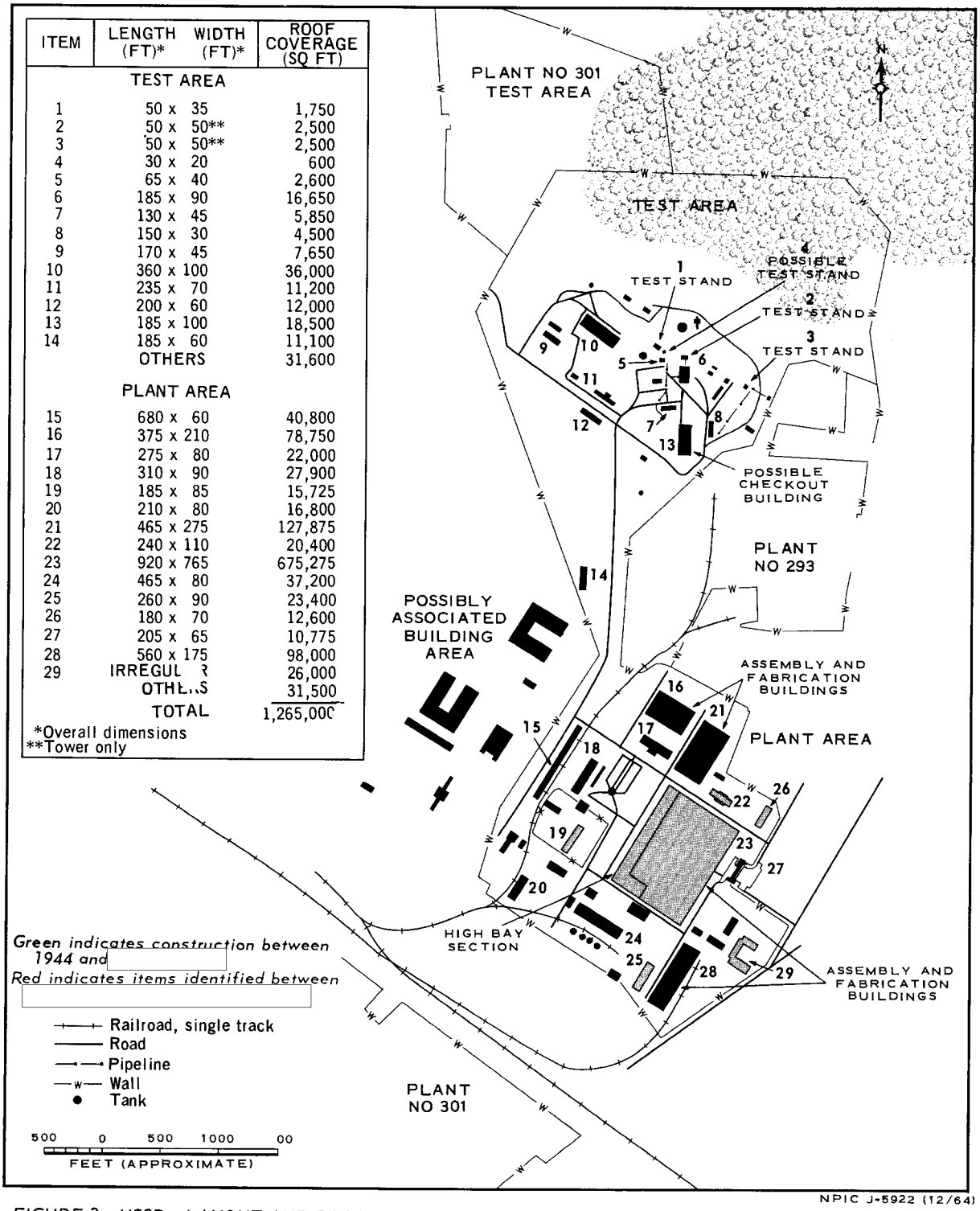


FIGURE 2. USSR: LAYOUT AND ROOF COVERAGE OF SPECIAL DESIGN BUREAU (OKB)/PLANT NO 456, KHIMKI.

Moscow 2-3

25X1
25X1
25X1

25X1
25X1

November 1964

MOSCOW: ZAGORSK ROCKET ENGINE TEST FACILITY KRASNOZAVODSK

PHOTOGRAPHIC CHRONOLOGY

This test facility was first observed on KEYHOLE photography of [redacted] however, few details could be discerned until [redacted] when three apparently operational vertical test stands were observed. Photography of [redacted] revealed that the checkout/assembly building (item 7, Figure 4) for Test Stand 1 had been doubled in size, that a new road had been completed to give access to the test facility from the west, and that a small housing/storage area had been constructed adjacent to the new road. Construction of these items had occurred since the last previous coverage of [redacted] Photography of [redacted] showed a newly completed support building (item 5) near the previously enlarged checkout/assembly building.

Photography of [redacted] was of good quality, permitting identification of an additional small vertical test stand (Test Stand 4) which had been present since [redacted] A new support building (item 8) was visible on the apron of the largest test stand, a building (item 12) had been completed where construction activity had been observed in [redacted] and new construction activity was seen just east of the secured portion of the facility. Photography of [redacted] revealed no changes except for continued construction activity to the east. Photography of [redacted] is the best to date and reveals details of buildings and pipeline connections that had not previously been observed. The continuing construction activity to the east of the facility consists of two structures, one of which is of unusual configuration, three excavations, ground scarring, and a trace or scar that suggests a future enlargement of the secured area.

25X1

25X1
25X1

November 1964

EVALUATION

The existence of the large static test facility near Zagorsk, first reported by returning Spaniards, is confirmed by photography which adds considerable detail to the layout of this facility. In the light of collateral information, it appears that the facility did not change much between 1956 and 1962. Since 1962, however, significant changes have taken place, and at the present time major alterations are going on. While the purpose of these changes is not yet defined, it is probable that at least some of them are associated with recent and continuing enlargement of facilities at the TTMTR. (See Moscow, Sections 1 and 2, for details on installations believed to use this test facility.)

25X1

25X1

25X1

November 1964

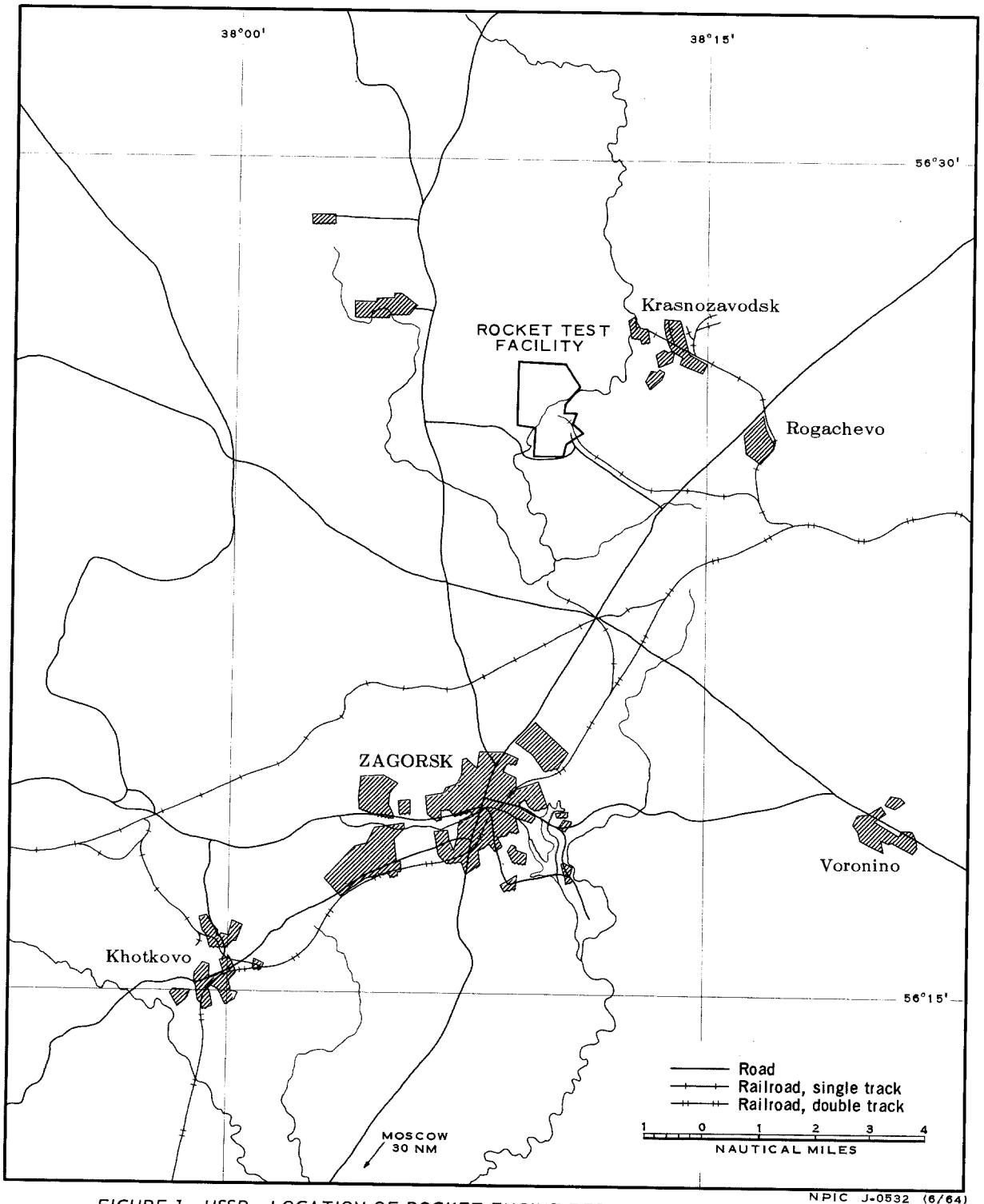


FIGURE 1. USSR: LOCATION OF ROCKET ENGINE TEST FACILITY NEAR CITY OF ZAGORSK.

25X1

November 1964

NPIC J-5923 (12/64)

FIGURE 2. USSR: LOCATION OF ROCKET ENGINE TEST FACILITY NEAR ZAGORSK

November 1964

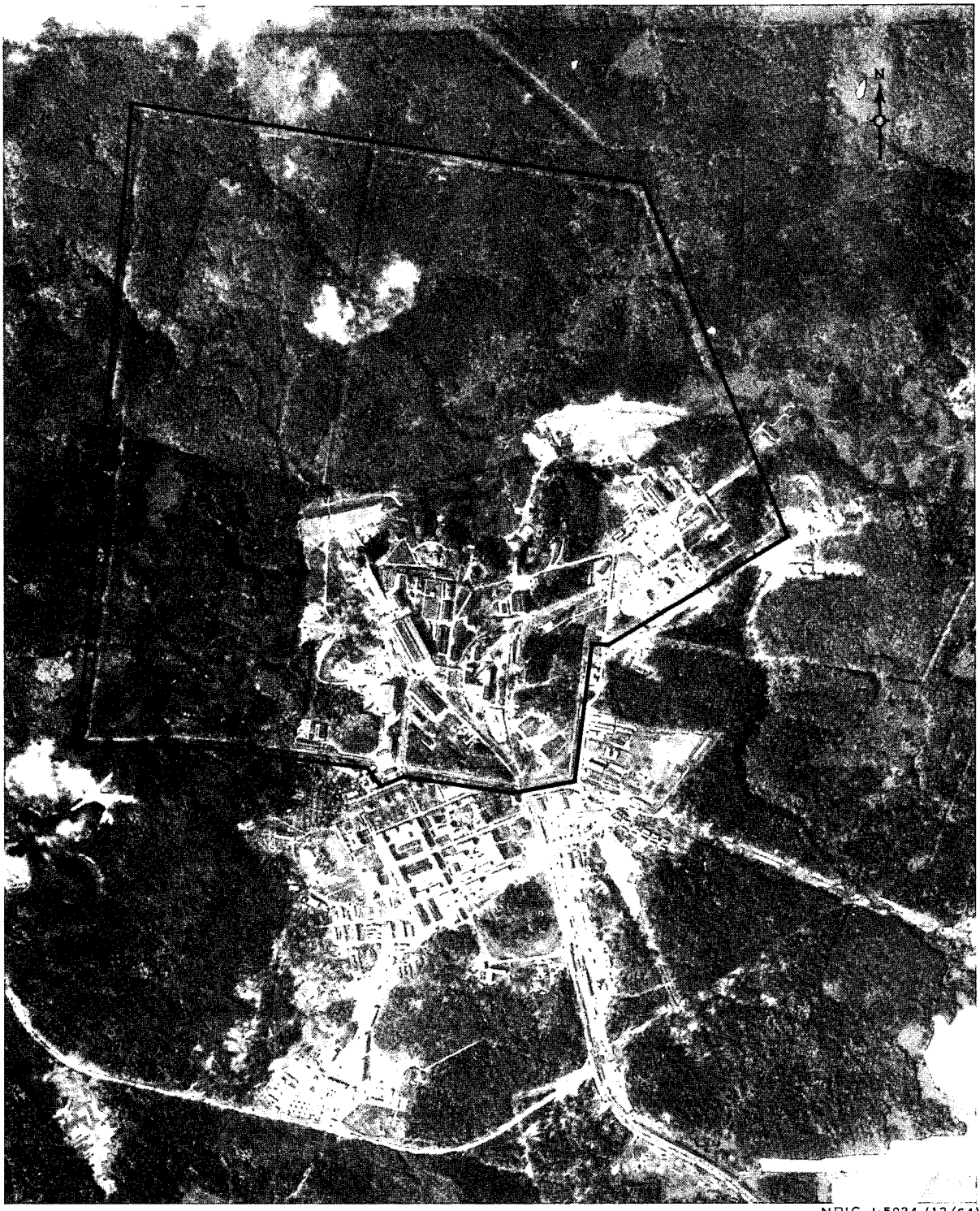


FIGURE 3. USSR: ROCKET ENGINE TEST FACILITY NEAR ZAGORSK

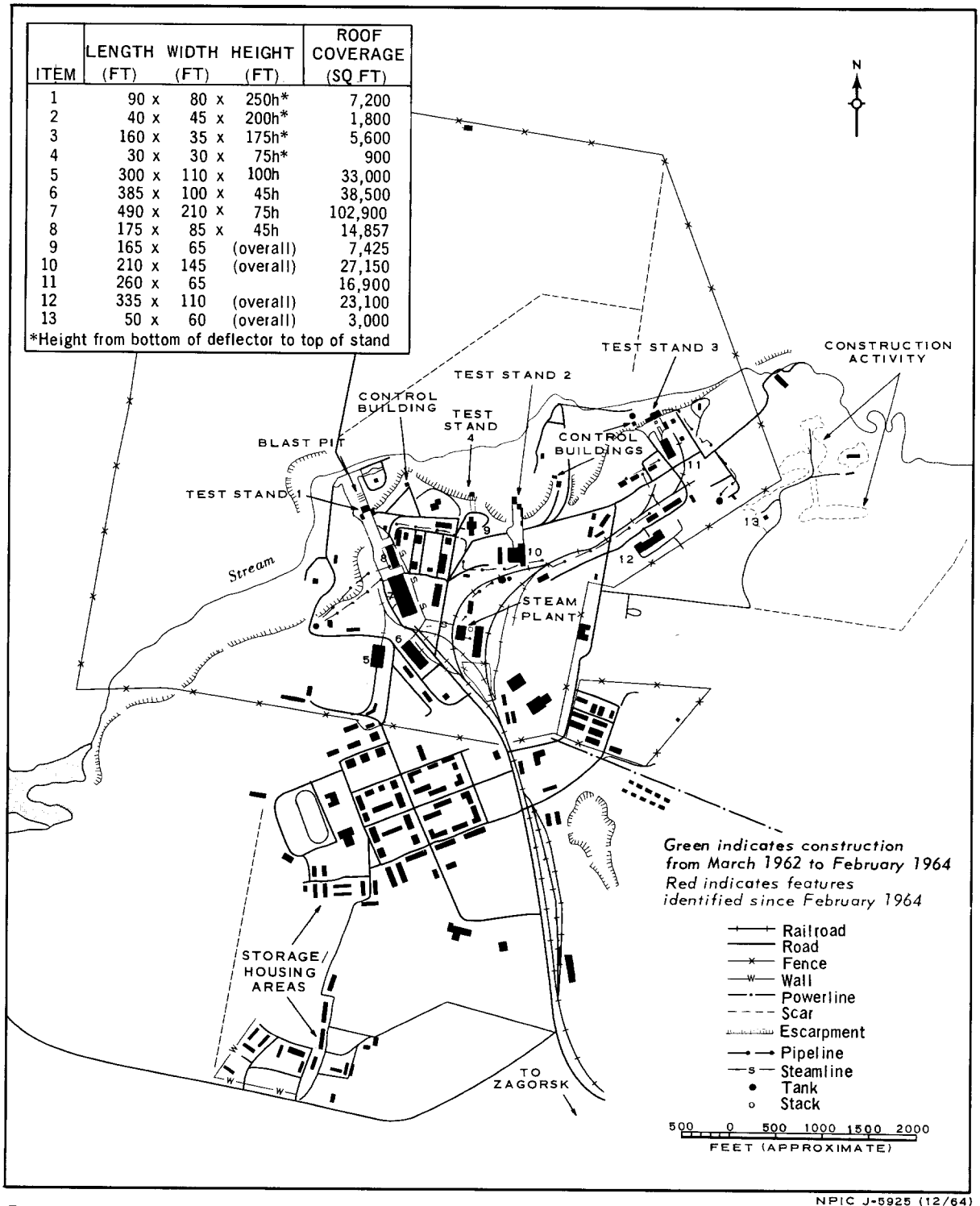
25X1

25X1
25X1

November 1964

ITEM	LENGTH (FT)	WIDTH (FT)	HEIGHT (FT)	ROOF COVERAGE (SQ FT)
1	90 x	80 x	250h*	7,200
2	40 x	45 x	200h*	1,800
3	160 x	35 x	175h*	5,600
4	30 x	30 x	75h*	900
5	300 x	110 x	100h	33,000
6	385 x	100 x	45h	38,500
7	490 x	210 x	75h	102,900
8	175 x	85 x	45h	14,857
9	165 x	65	(overall)	7,425
10	210 x	145	(overall)	27,150
11	260 x	65		16,900
12	335 x	110	(overall)	23,100
13	50 x	60	(overall)	3,000

*Height from bottom of deflector to top of stand



NPIC J-5925 (12/64)

FIGURE 4. USSR: LAYOUT AND ROOF COVERAGE OF ROCKET ENGINE TEST FACILITY NEAR ZAGORSK.

Moscow 3-5

25X1

November 1964

MOSCOW: GUIDED MISSILE R & D PLANT NO 301, KHIMKI

PHOTOGRAPHIC CHRONOLOGY

German photography of provided good coverage of the Plant Area; there was no Test Area at that time. KEYHOLE photography of provided no details of the Plant or Test Areas, but the photography revealed that some facilities were present in the Test Area and new facilities may have been under construction. On half of a building (item 12, Figure 2) in the Plant Area appeared to have been rebuilt, a change that had taken place sometime after 1944.

Further development of the Test Area was evident in a building (item 8), one bay of another building (item 6), and the test stands were visible; however, details could not be discerned. In a second bay of Building 6 was seen to be under construction, the two vertical test stands and one possible test stand were clearly observed for the first time, and the southeast half of a building (item 11) in the Plant Area was in the process of being rebuilt with its walls about half completed. By the rebuilt portion of the building (item 11) in the Plant Area was partially roofed, and items 6 and 8 in the Test Area appeared to be complete. In roofing was complete on the building (item 11) in the Plant Area, and a new long narrow structure was visible just south of the entrance of the Test Area.

A new building area and a probable missile guidance calibration grid on the site of the former Khimki Airfield North may be related to Plant No 301. The new building area was under construction when first seen in 1962, and the grid was constructed between 1944 and 1962. A wall separates the test area of Plant No 301 from the former airfield site.

25X1
25X1

November 1964

EVALUATION

Plant No 301, Khimki, is believed to have been involved in the design, development, and production of the SA-1 in the early 1950s. There have been indications that the plant played a similar role in the SA-2 program and may be involved in the SA-3 and/or GRIFFON development and production programs as well.

25X1

25X1

25X1

25X1

November 1964

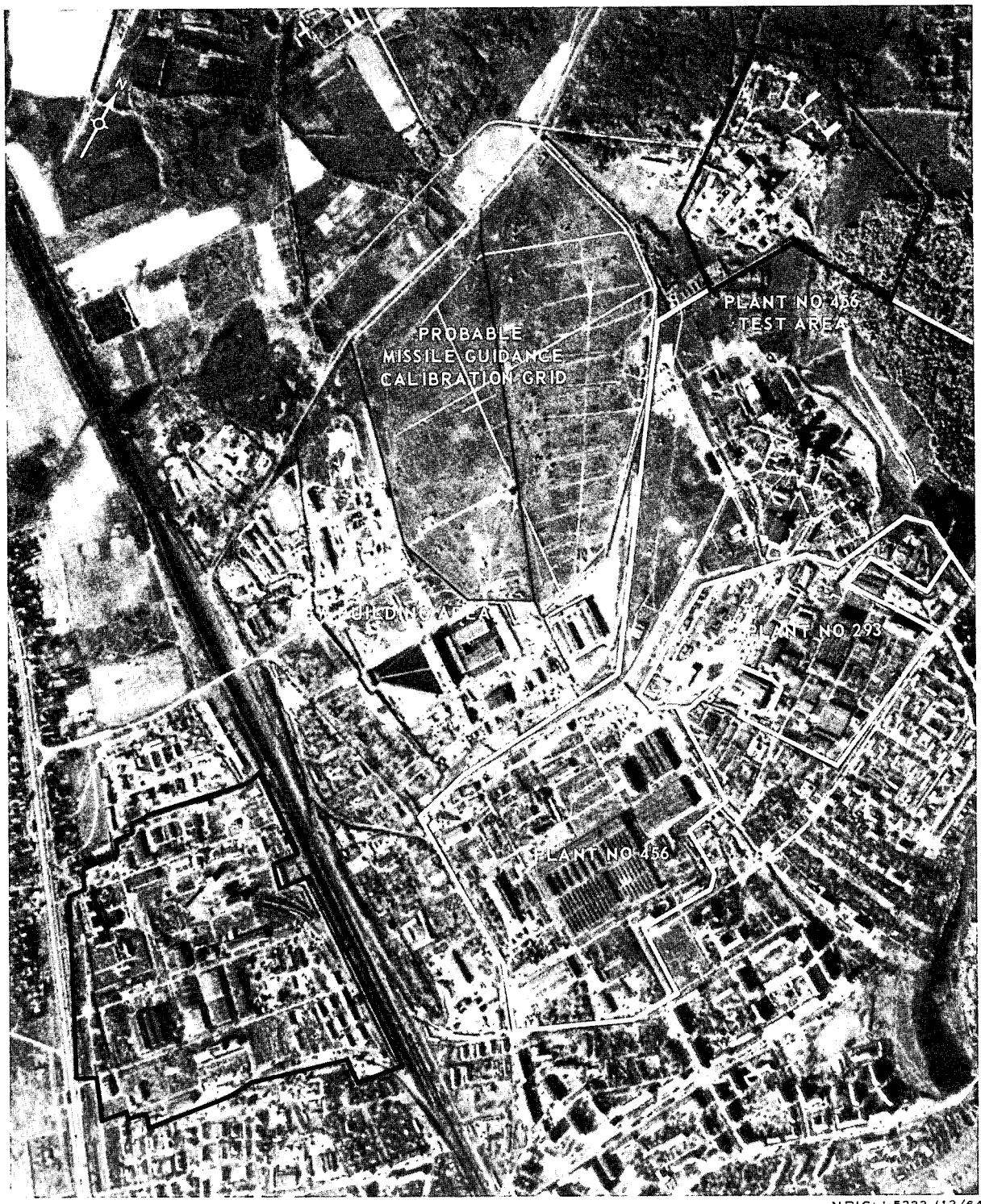


FIGURE 1. USSR: GUIDED MISSILE R & D PLANT NO 301, KHIMKI

25X1

Moscow 4-2

25X1

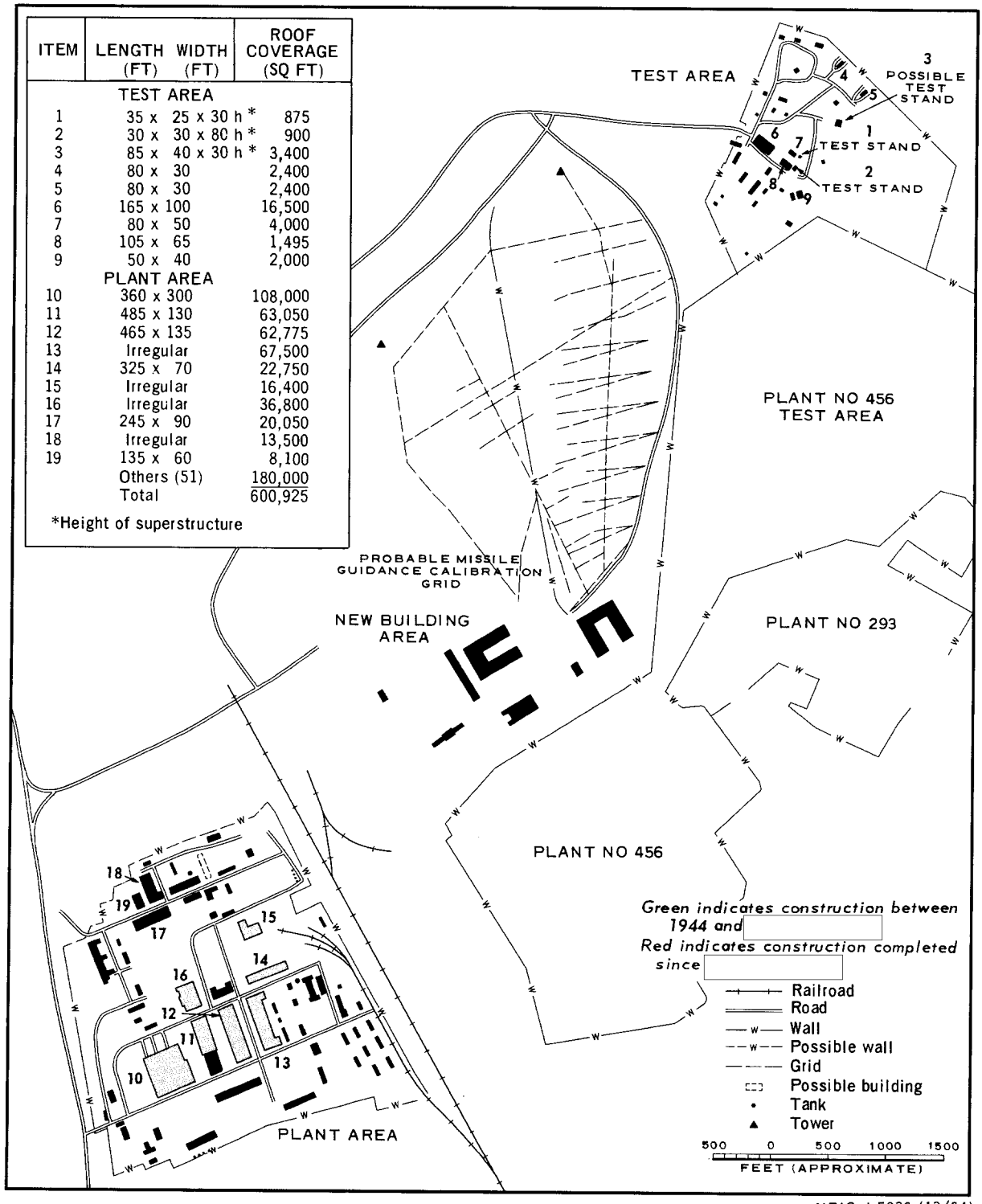
25X1

25X1

November 1964

ITEM	LENGTH (FT)	WIDTH (FT)	ROOF COVERAGE (SQ FT)
	TEST AREA		
1	35 x	25 x 30 h *	875
2	30 x	30 x 80 h *	900
3	85 x	40 x 30 h *	3,400
4	80 x	30	2,400
5	80 x	30	2,400
6	165 x	100	16,500
7	80 x	50	4,000
8	105 x	65	1,495
9	50 x	40	2,000
	PLANT AREA		
10	360 x	300	108,000
11	485 x	130	63,050
12	465 x	135	62,775
13	Irregular		67,500
14	325 x	70	22,750
15	Irregular		16,400
16	Irregular		36,800
17	245 x	90	20,050
18	Irregular		13,500
19	135 x	60	8,100
	Others (51)		180,000
	Total		600,925

*Height of superstructure



NPIC J-5926 (12/64)

FIGURE 2. USSR: LAYOUT AND ROOF COVERAGE OF GUIDED MISSILE R & D PLANT NO 301, KHIMKI.

Moscow 4-3

25X1

November 1964

PERM

25X1

25X1

August 1963

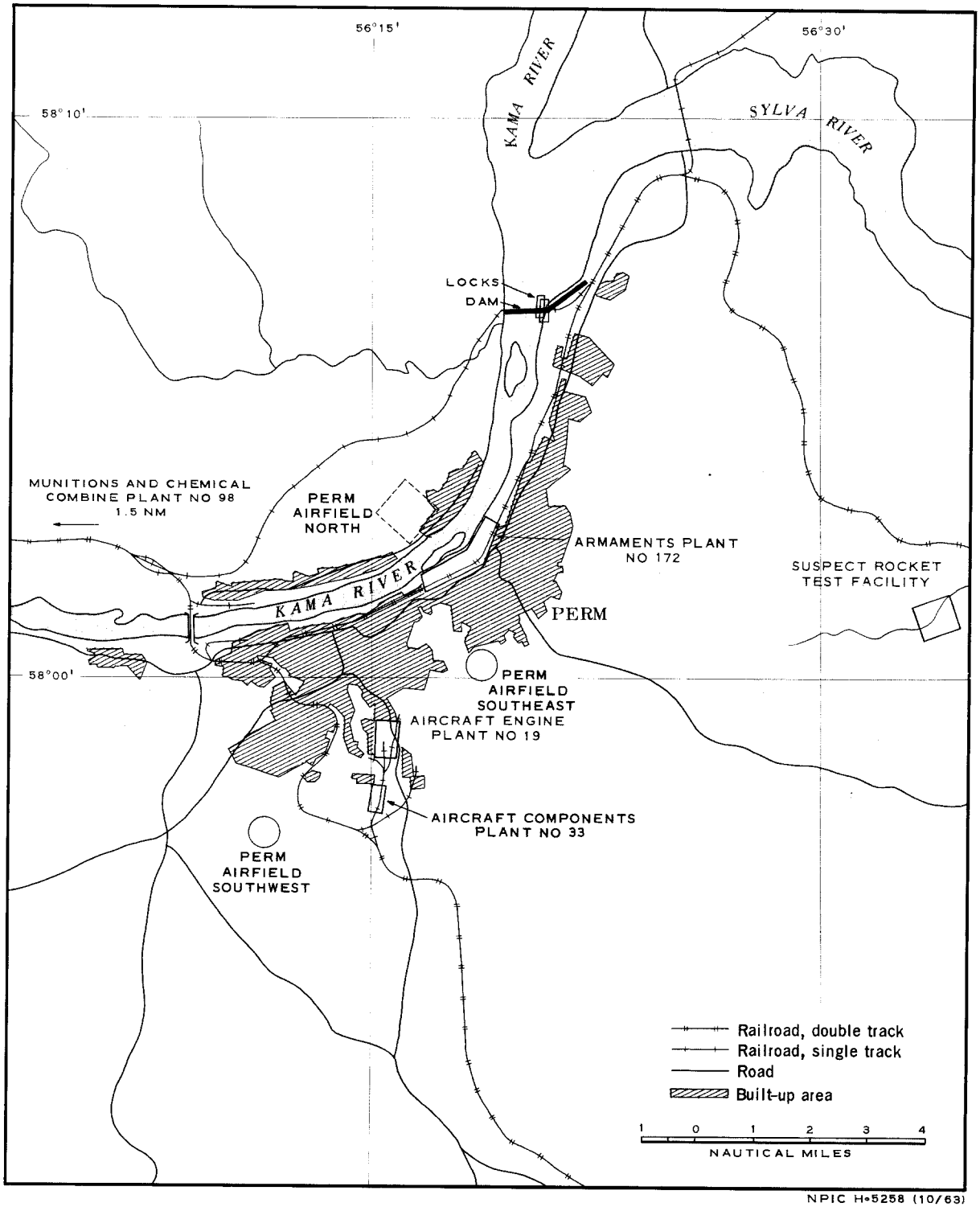


FIGURE 1. USSR: CITY OF PERM.

25X1

November 1964

PERM: PROBABLE SOLID PROPELLANTS TEST FACILITY

PHOTOGRAPHIC CHRONOLOGY

When first observed on KEYHOLE photography of this test facility, at the Perm Munitions and Chemical Combine K. Kirov No 98, was in an undetermined stage of construction. The blast deflector was present at that time, and the test cell was complete by as well as four probably associated buildings. A possible waste burn area located 1,800 feet west of the test cell and a group of five offset buildings about 4,400 feet east of the test cell appeared on photography of Nine probable associated buildings were identified on photography of

Coverage of was of poor quality and yielded no information, but coverage of was of good quality and permitted firm identification of five major buildings, one of which is a large building with an irregular configuration which probably serves the same purpose as the H-shaped buildings observed at three other test facilities. Later coverage in permitted identification of the previously identified possible waste burn area as a small, separately secured, single test position. Subsequent coverage of confirms that the facility consists principally of one test cell, five major buildings, and a small, separately secured test cell.

EVALUATION

25X1
25X1

November 1964

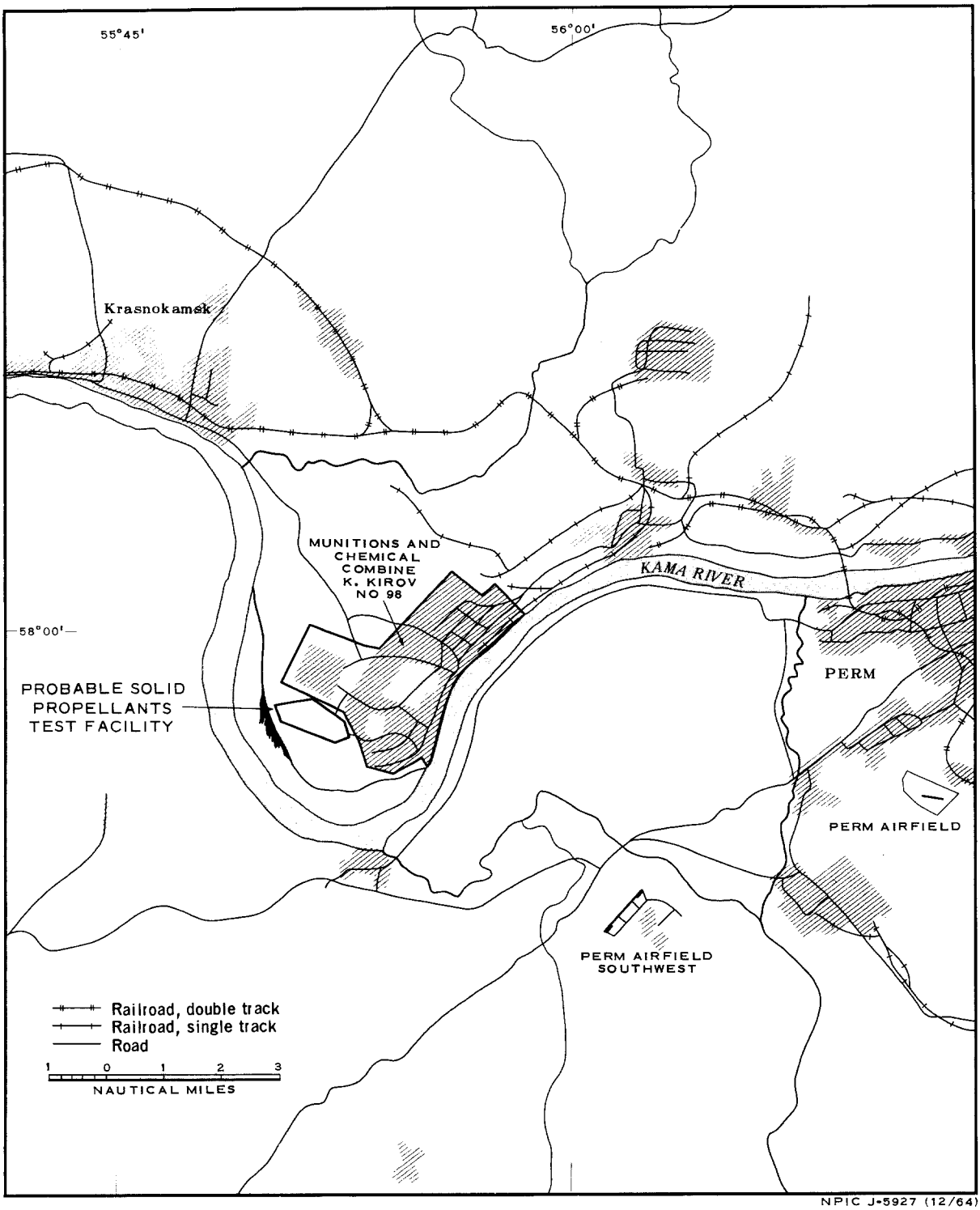


FIGURE 1. USSR: LOCATION OF PROBABLE SOLID PROPELLANTS TEST FACILITY NEAR CITY OF PERM.

Perm 4-2

25X1

25X1
25X1

November 1964

NPIC J-5928 (12/64)

FIGURE 2. USSR: LOCATION OF PROBABLE SOLID PROPELLANTS TEST FACILITY NEAR CITY OF PERM

25X1

Perm 4-3

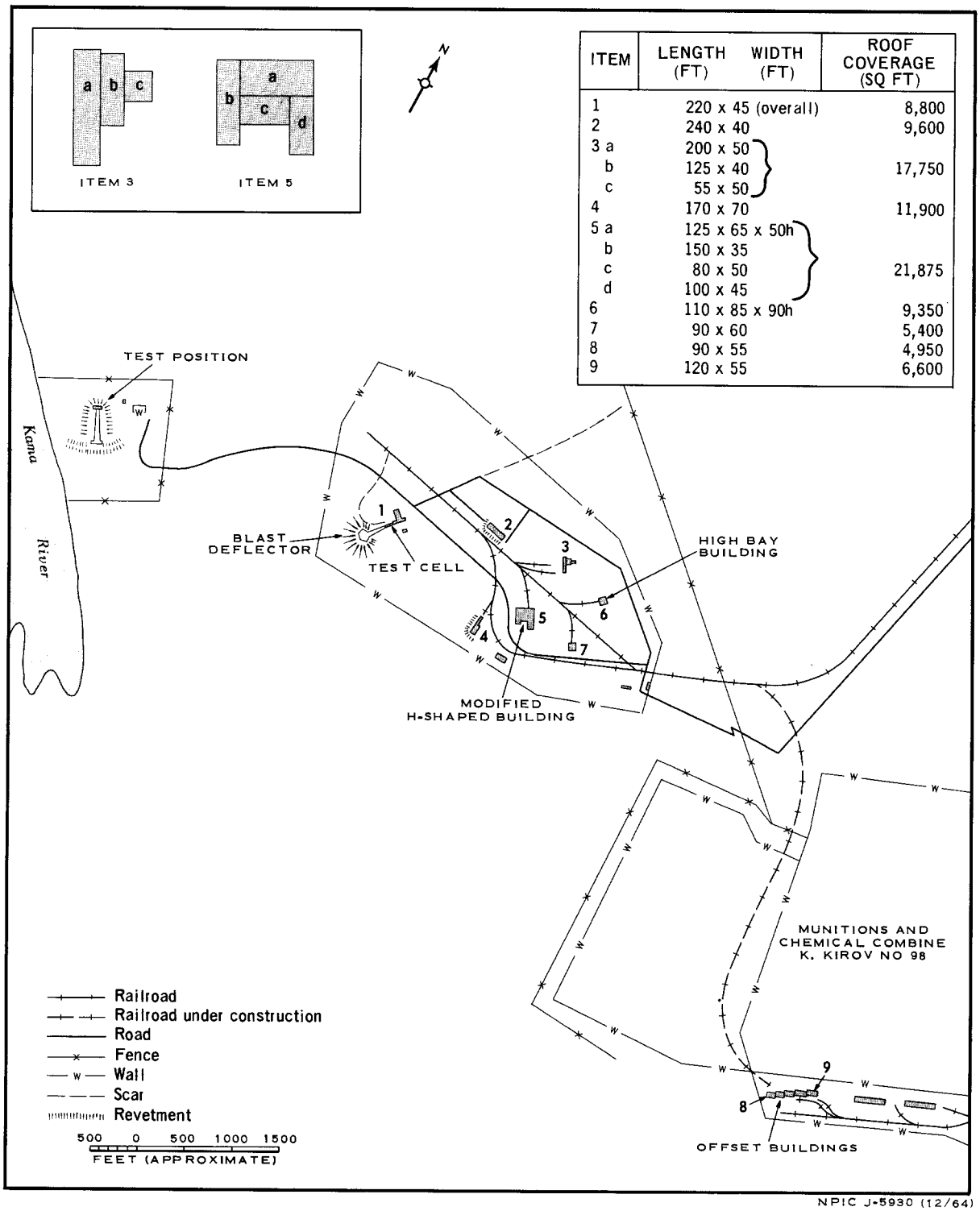
25X1

FIGURE 3. USSR: PROBABLE SOLID PROPELLANTS TEST FACILITY NEAR PERM

25X1

25X1

November 1964



ITEM	LENGTH (FT)	WIDTH (FT)	ROOF COVERAGE (SQ FT)
1	220 x 45 (overall)		8,800
2	240 x 40		9,600
3 a	200 x 50		
b	125 x 40		17,750
c	55 x 50		
4	170 x 70		11,900
5 a	125 x 65 x 50h		
b	150 x 35		
c	80 x 50		21,875
d	100 x 45		
6	110 x 85 x 90h		9,350
7	90 x 60		5,400
8	90 x 55		4,950
9	120 x 55		6,600

FIGURE 4. USSR: LAYOUT AND ROOF COVERAGE OF PROBABLE SOLID PROPELLANTS TEST FACILITY NEAR PERM.

Perm 4-5

25X1

25X1
25X1

November 1964

STERLITAMAK

25X1

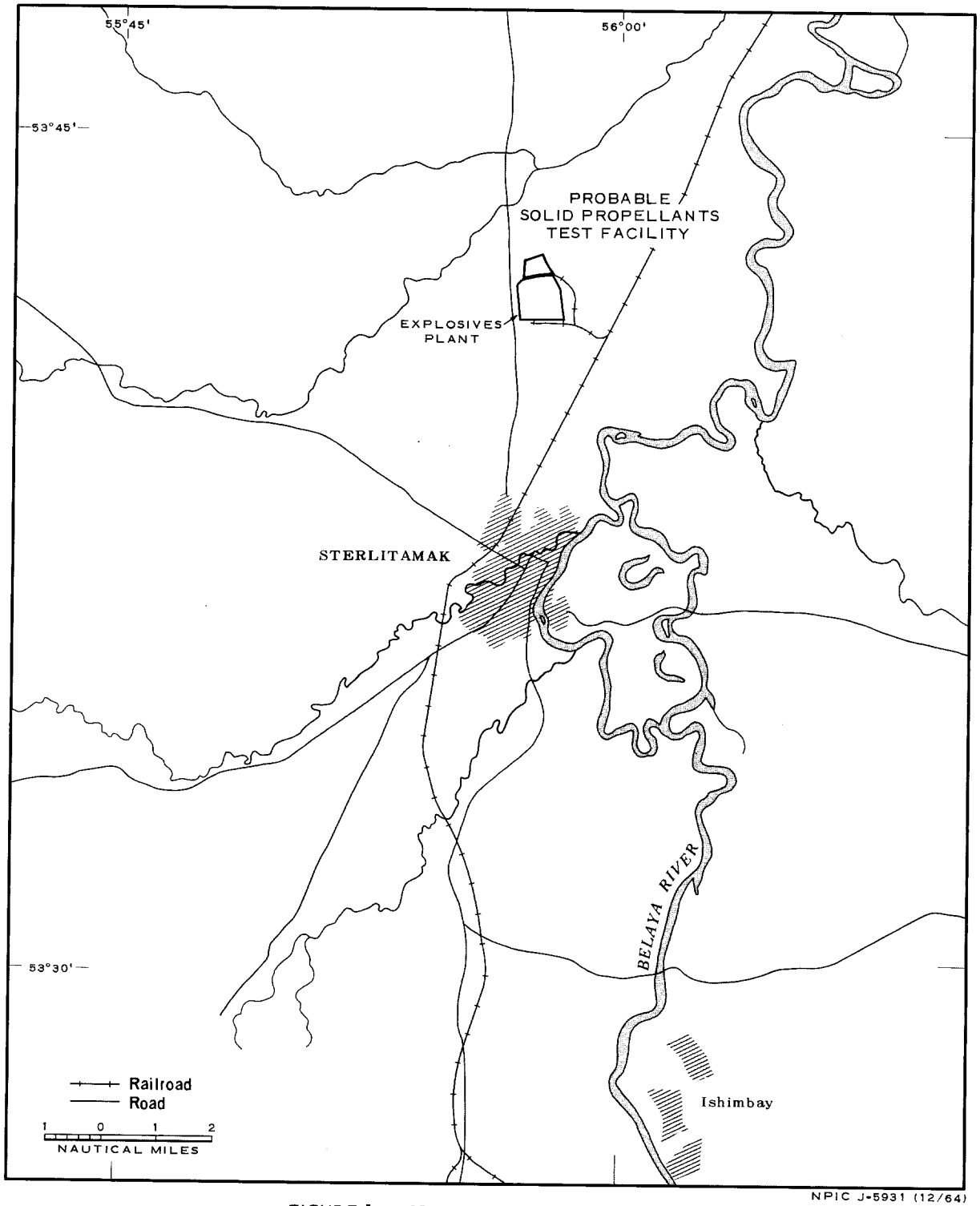


FIGURE 1. USSR: CITY OF STERLITAMAK.

November 1964

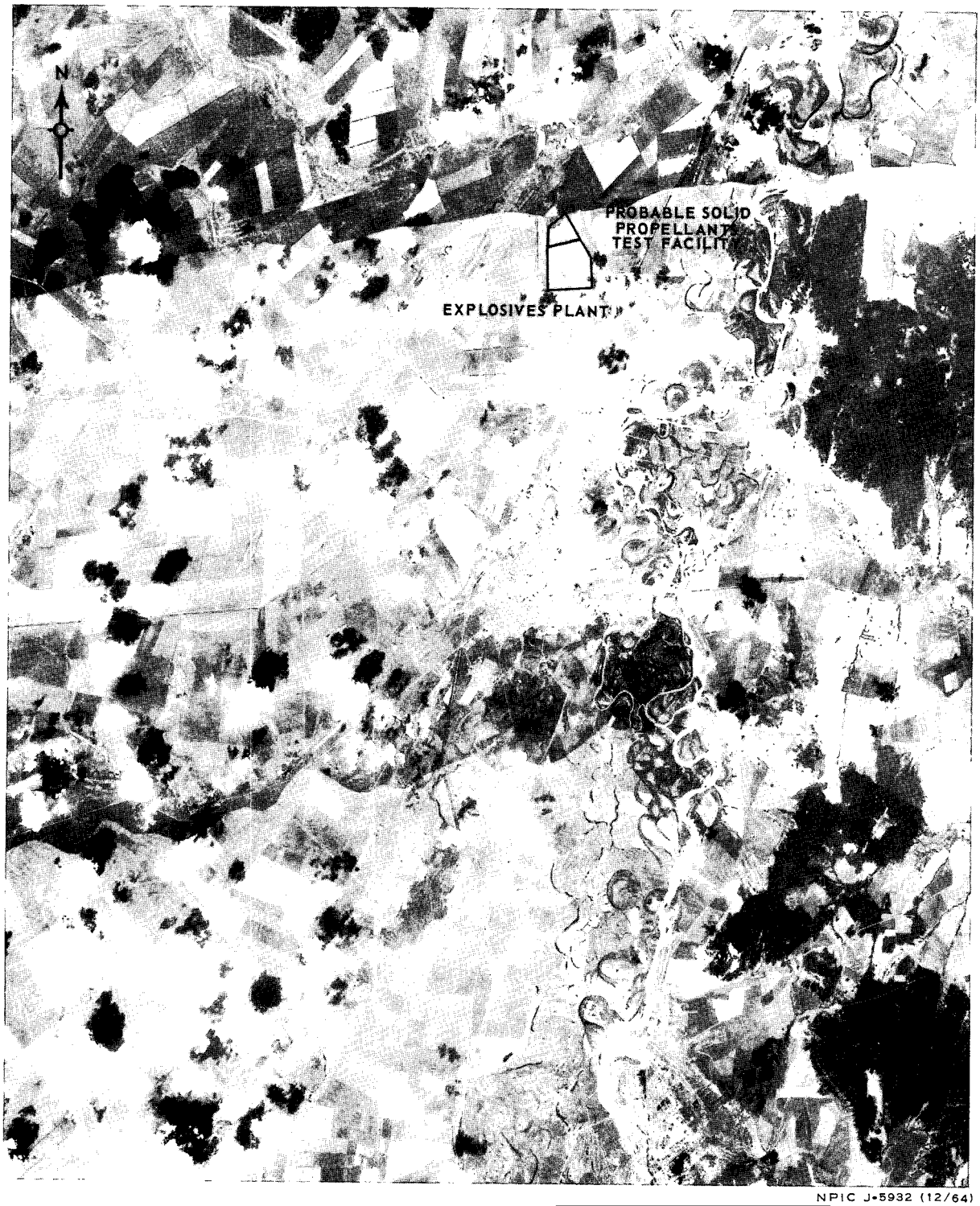


FIGURE 2. USSR: CITY OF STERLITAMAK

November 1964

STERLITAMAK: PROBABLE SOLID PROPELLANTS TEST FACILITY

PHOTOGRAPHIC CHRONOLOGY

Dating the initial construction of this test facility at the Sterlitamak Explosives Plant (No 850) by means of available photography is not possible. The facility is not present on German photography of the site obtained in [redacted] The next coverage of the site was in [redacted] and by that time the facility consisted of the test cell with its blast deflector, the H-shaped building, and three support buildings. Photography of [redacted] revealed a group of three offset buildings (item 7, Figure 2) that had not been present the previous month.

Two KEYHOLE missions covered the site in 1963. The addition of the group of five offset buildings (item 6) was seen on photography of [redacted] and five small buildings had been added by mid-[redacted] No further coverage was obtained until [redacted] during the seven-month interval the L-shaped build- (item 9) was constructed and two small buildings and some ground scars made their appearance northwest of the test cell. By [redacted] the T-shaped building (item 8) had been constructed near the offset buildings and two storage buildings, one revetted and the other probably revetted, had been added to the facility. On the [redacted] photography, the roofs of the offset buildings appear to be stepped; that is, each roof is at a different level, and the roof levels progress in even steps from a low at one end of the group to a high at the other. No apparent change in the facility is observed on photography obtained later in [redacted]

25X1
25X1

November 1964

EVALUATION

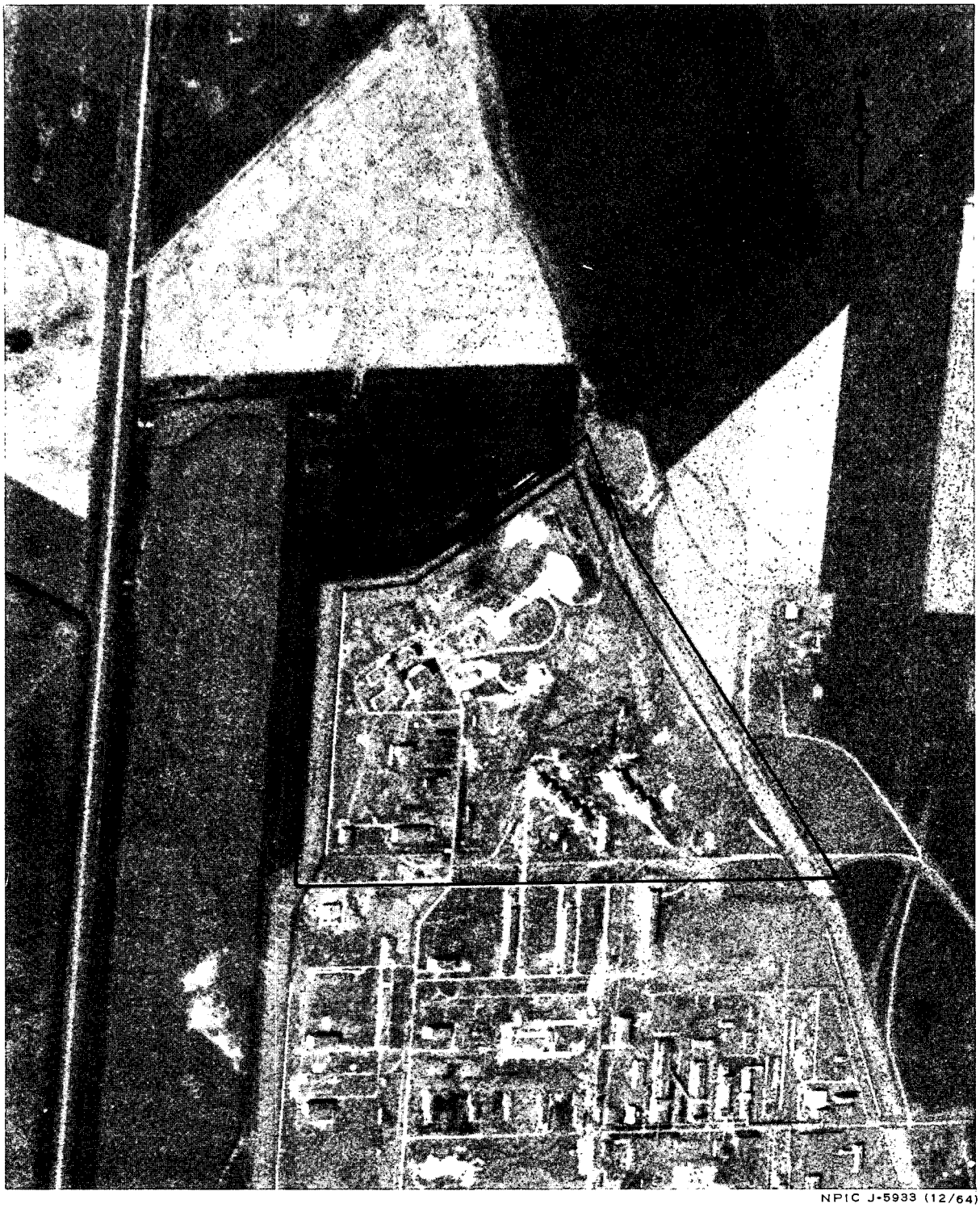
Assessment of this facility is hampered by a complete lack of collateral intelligence as to its function. On the basis of photographic evidence alone the facility is judged to be a probable test facility for solid rocket propellants. While some testing could now be taking place, because of the lack of evidence of test firings, and the continuation of construction, it appears that the facility is not yet fully operational.

25X1

25X1

25X1

November 1964



NPIC J-5933 (12/64)

FIGURE 1. USSR: PROBABLE SOLID PROPELLANTS TEST FACILITY NEAR STERLITAMAK

25X1

Sterlitamak 1-2

25X1

25X1

25X1

November 1964

ITEM	LENGTH (FT)	WIDTH (FT)	ROOF COVERAGE (SQ FT)
1	250 x 45 (overall)		10,000
2 a	280 x 85		
b	95 x 85		
c	150 x 80		66,050
d	160 x 80		
e	125 x 75		
3	145 x 60		8,700
4	Irregular		8,750
5	215 x 85		18,275
6	55 x 55		3,025
7	145 x 55		7,975
8	Irregular		10,050
9	Irregular		7,500

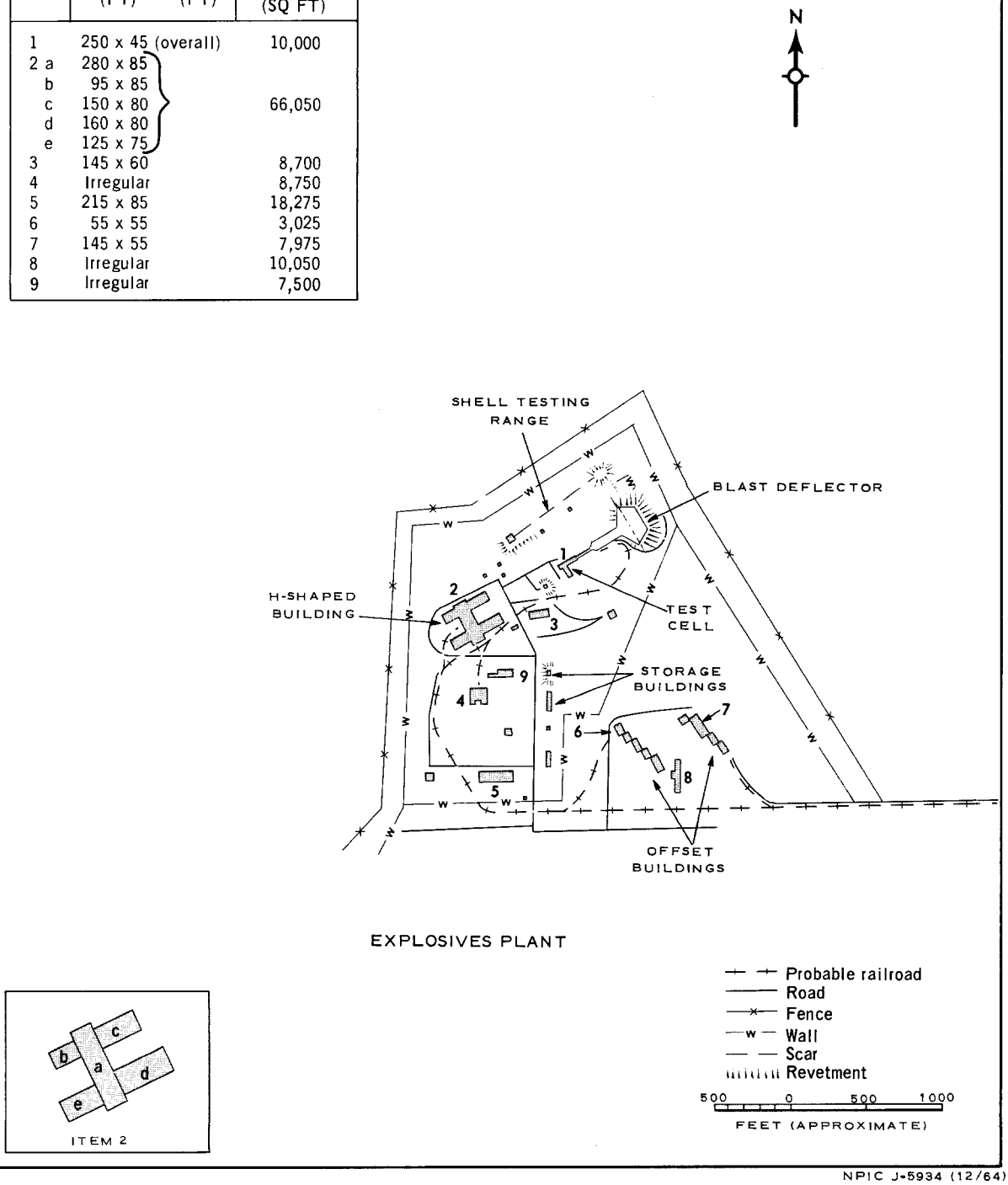


FIGURE 2. USSR: LAYOUT AND ROOF COVERAGE OF PROBABLE SOLID PROPELLANTS TEST FACILITY NEAR STERLITAMAK.

Sterlitamak 1-3

25X1

November 1964

TAI-YUAN

25X1

25X1

November 1964

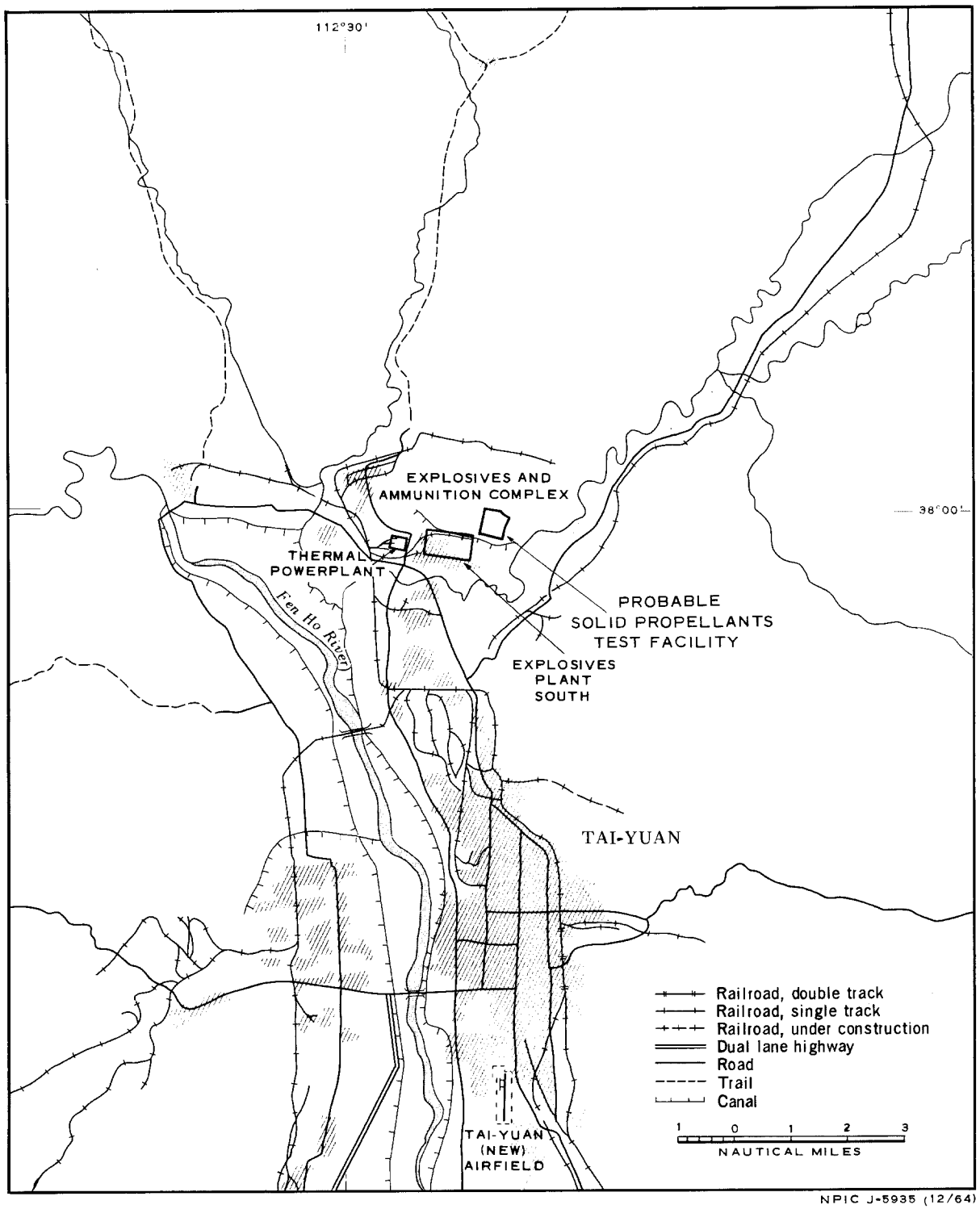


FIGURE 1. CHINA: CITY OF TAI-YUAN.

25X1

25X1
25X1

November 1964

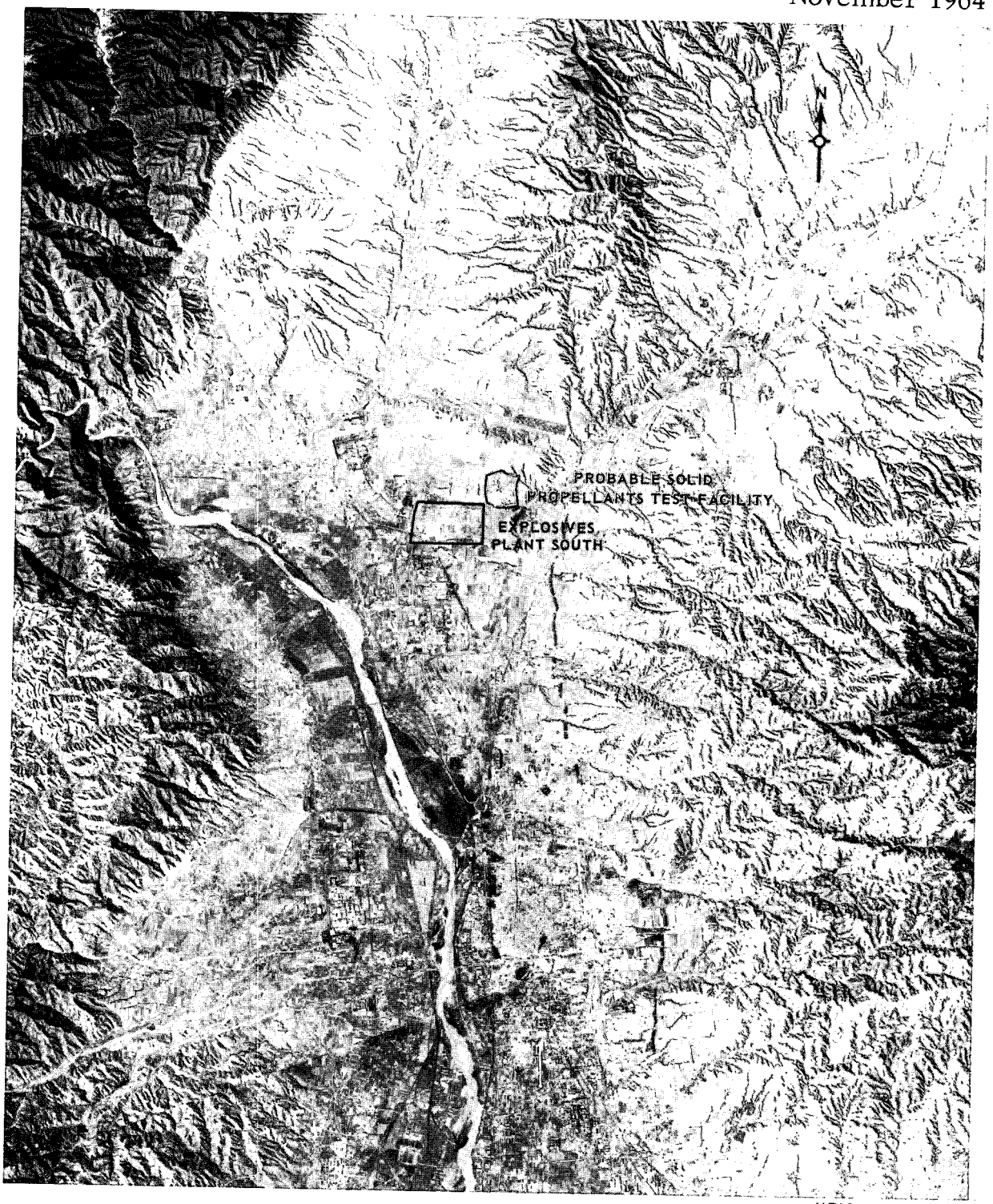


FIGURE 2. CHINA: CITY OF TAI-YUAN (

25X1

Tai-yuan 0-3

25X1

November 1964

TAI-YUAN: PROBABLE SOLID PROPELLANTS TEST FACILITY

PHOTOGRAPHIC CHRONOLOGY

This probable test facility at the Explosives Plant South of the Tai-yuan Explosives and Ammunition Complex was not present on photography of , but KEYHOLE photography of revealed the probable test cell and three or four buildings in early stages of construction. Its identification as a probable solid propellants test facility was made from photography of At that time the facility appeared to be still under construction, and there were no definite indicators that any testing had taken place. Photography of showed that one building (item 8) had been completed and revetted since but there was still no facing on the blast deflector, suggesting that the facility was not yet complete if Soviet practice is being followed.

EVALUATION

November 1964

FIGURE 1. CHINA: PROBABLE SOLID PROPELLANTS TEST FACILITY NEAR TAI-YUAN

25X1

25X1

November 1964

25X1

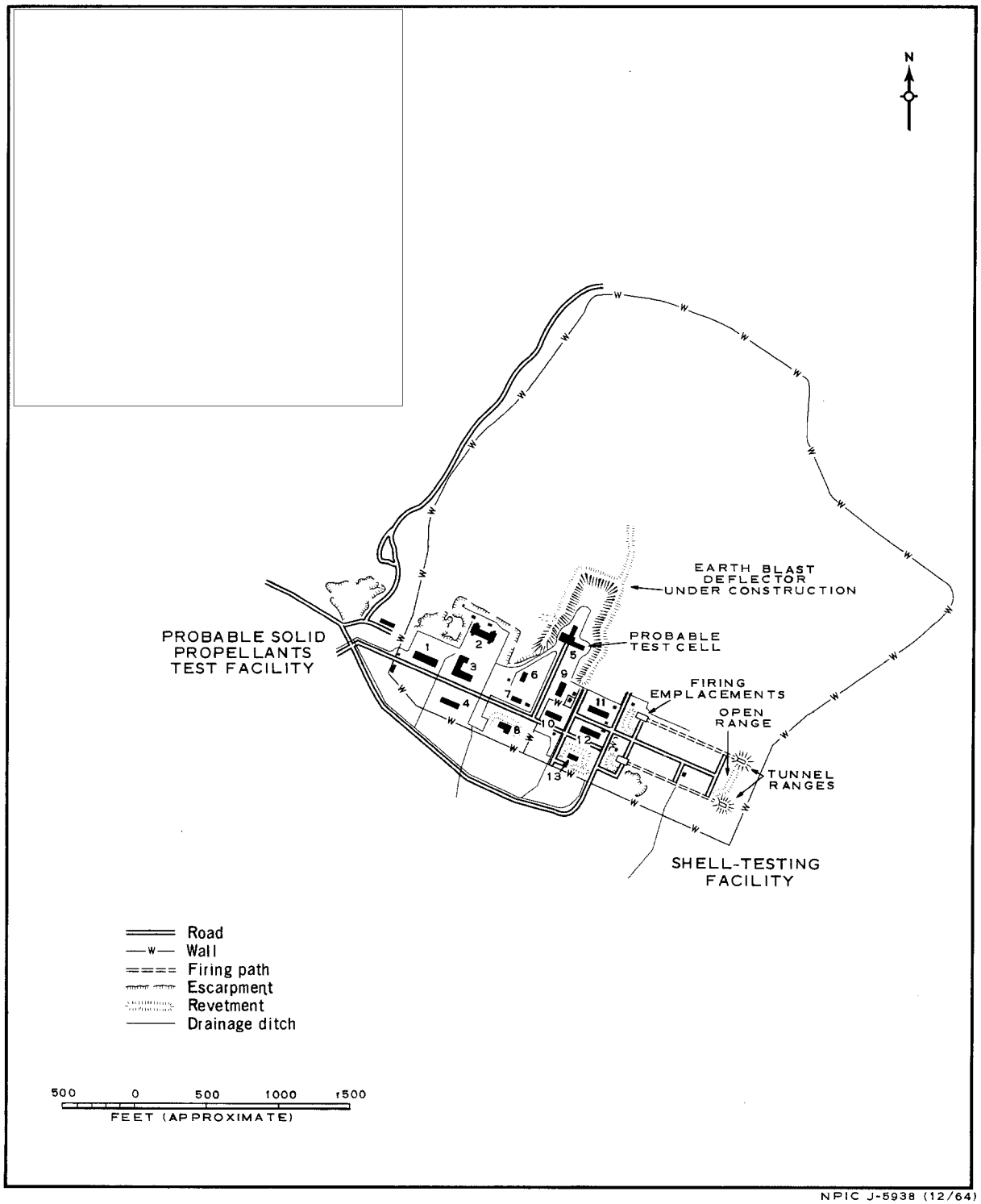


FIGURE 2. CHINA: LAYOUT AND ROOF COVERAGE OF PROBABLE SOLID PROPELLANTS TEST FACILITY NEAR TAI-YUAN.

Tai-yuan 1-3

25X1

25X1

25X1

November 1964

VORONEZH

	Section
City of Voronezh	0
Rocket Engine Test Facility	1
51-34N 39-08E;	

25X1

25X1

25X1

25X1

November 1964

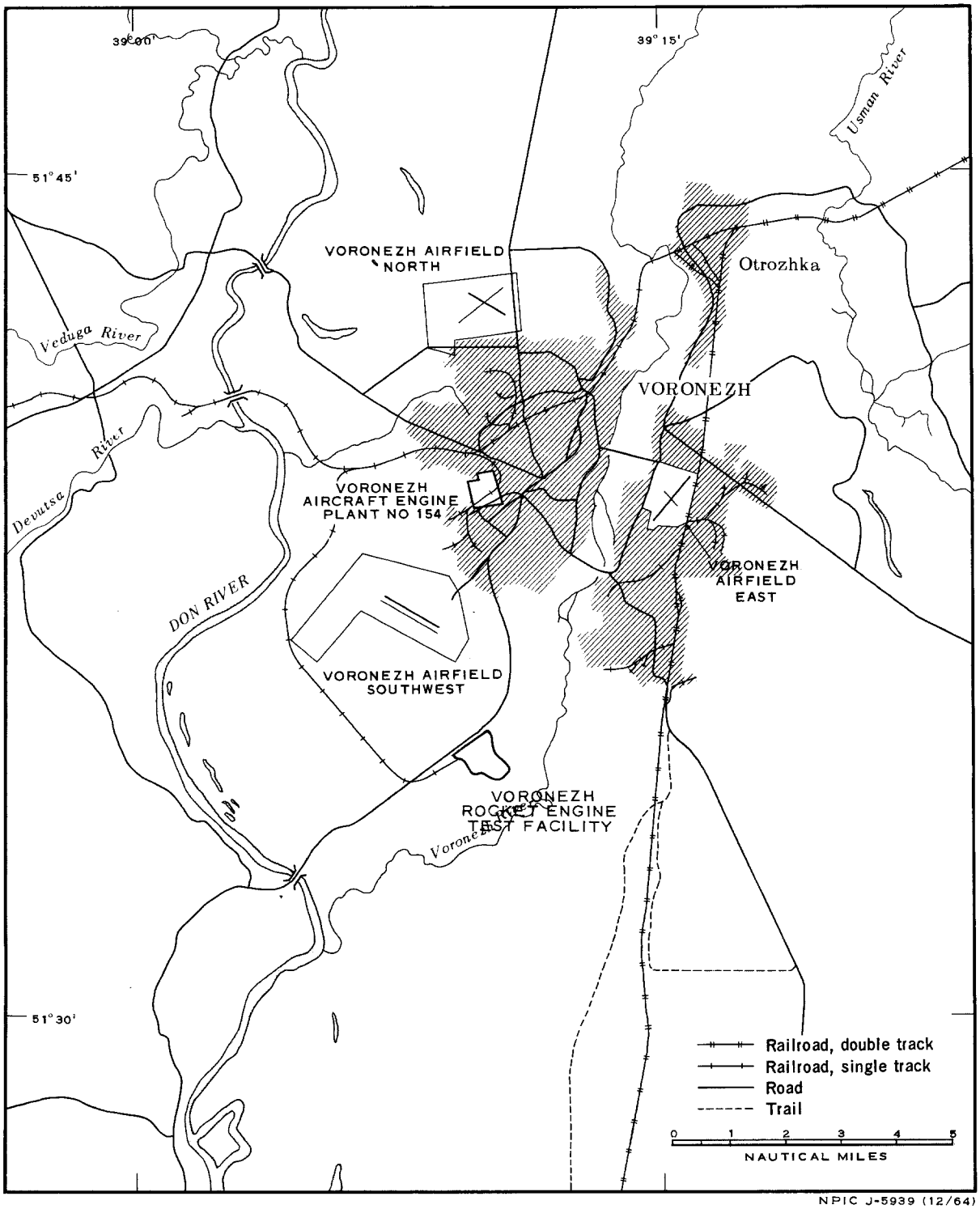


FIGURE 1. USSR: CITY OF VORONEZH.

25X1

25X1

25X1

November 1964

NPIC J-5940 (12/64)

FIGURE 2. USSR: CITY OF VORONEZH

25X1

Voronezh 0-3

25X1

25X1
25X1

November 1964

VORONEZH: ROCKET ENGINE TEST FACILITY

PHOTOGRAPHIC CHRONOLOGY

This installation was first observed on TALENT photography of 25X1 At that time it consisted of a secured area containing one large building with two probable horizontal firing bays and six small miscellaneous buildings. Construction activity was evident immediately outside the secured area. KEYHOLE photography of 25X1 revealed that the facility had been enlarged to the south and that additional construction had taken place. This was the first evidence that a vertical test facility was under construction in this area. Continuing expansion and construction were evident in 25X1 25X1 and the entire facility covered about 360 acres. At that time a possible vertical test stand and a large building were visible in the newly enlarged southern portion of the facility, two new horizontal test cells were discernible in the original test area, and a new rail spur still under construction was observed in the southwestern portion of the facility. In addition, blast marks were observed at two of the horizontal test cell firing bays.

Photography of 25X1 confirmed the existence of the large vertical test stand and associated control and checkout buildings in the southern portion of the facility where evidence of construction activity had been observed as early as 25X1 New construction activity northwest of the test stand and additional roads and small buildings were also visible throughout the facility.

25X1 the best KEYHOLE photography of the facility to date, revealed that a second vertical test stand of unusual design was apparently in the mid stages of construction northwest of the previously identified vertical test stand. Both test stands will probably utilize the same control building. The first test stand is now in the final stages of construction, and grading

25X1

25X1
25X1

November 1964

continues in the blast pit. Construction activity is evident in small areas throughout the facility.

EVALUATION

There is no collateral information that reflects the existence of the rocket test facility at Voronezh. 25X1
25X1

The original horizontal test area appeared to be operational when first seen in 1960, but blast marks confirming operational status were first noted in 25X1 The first vertical stand will probably be operative by the close of 1964.

25X1

25X1

25X1

November 1964

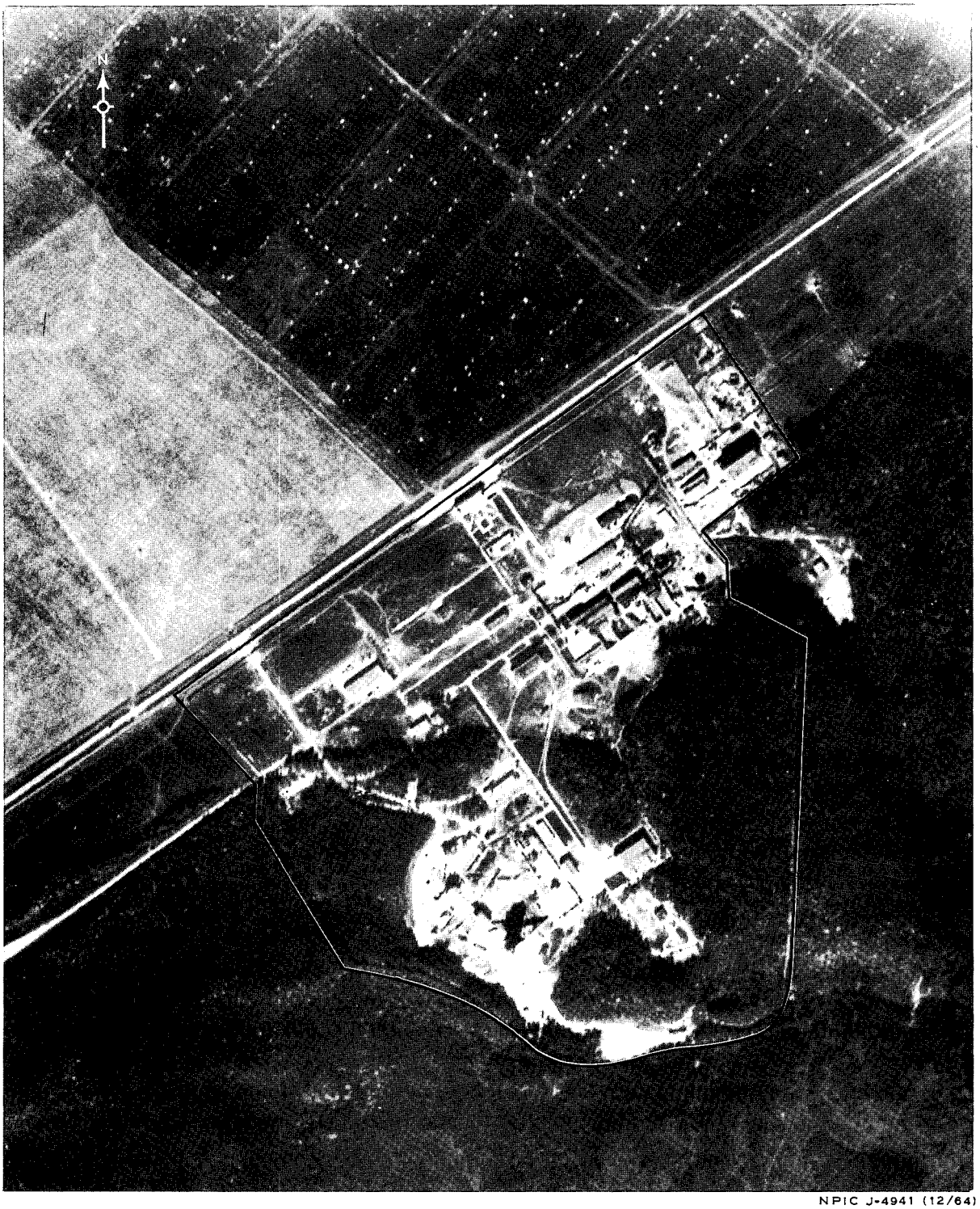


FIGURE 1. USSR: ROCKET ENGINE TEST FACILITY AT VORONEZH

25X1

Voronezh 1-2

25X1

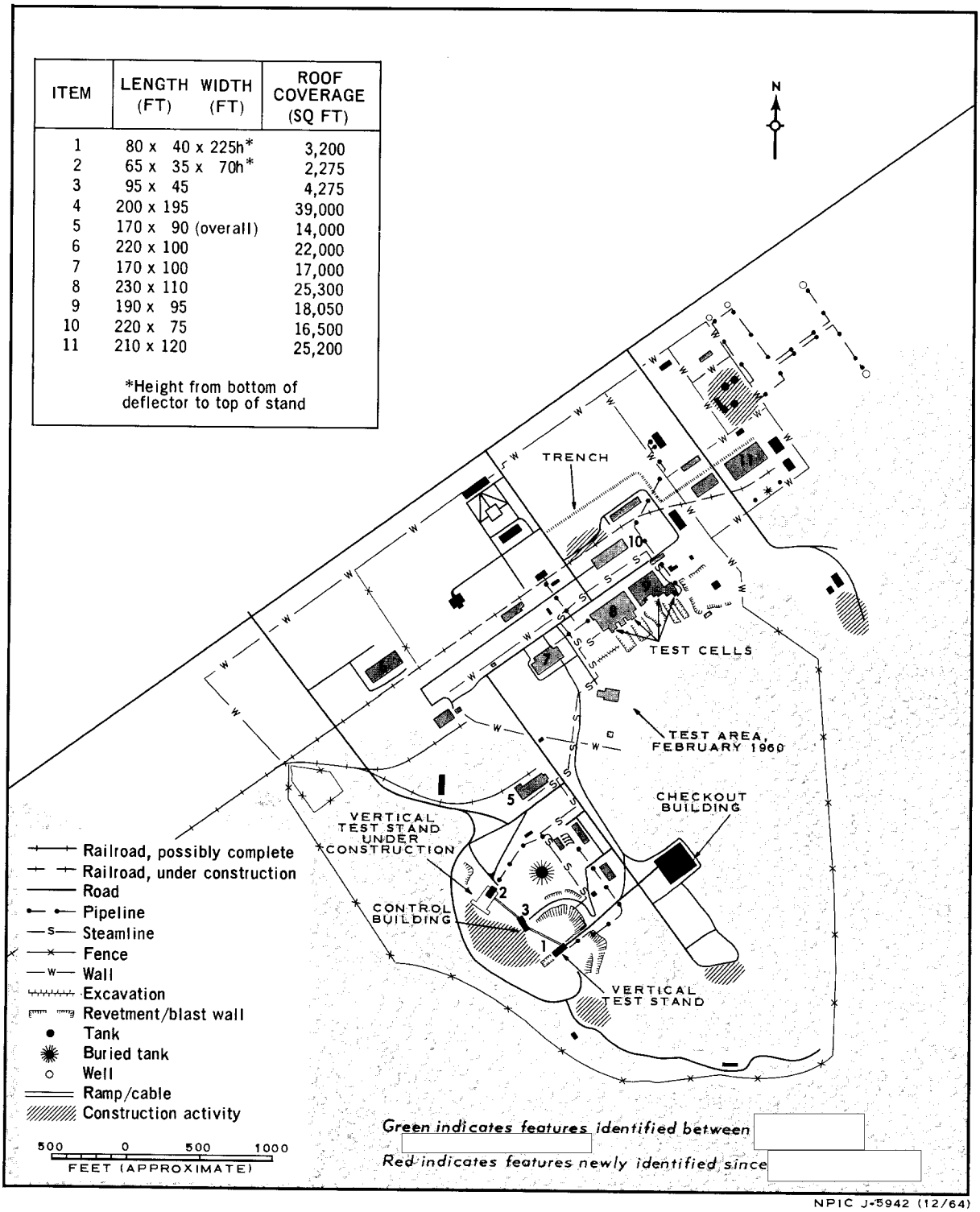
25X1

25X1

November 1964

ITEM	LENGTH (FT)	WIDTH (FT)	ROOF COVERAGE (SQ FT)
1	80 x	40 x 225h*	3,200
2	65 x	35 x 70h*	2,275
3	95 x	45	4,275
4	200 x	195	39,000
5	170 x	90 (overall)	14,000
6	220 x	100	22,000
7	170 x	100	17,000
8	230 x	110	25,300
9	190 x	95	18,050
10	220 x	75	16,500
11	210 x	120	25,200

*Height from bottom of deflector to top of stand



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25X1

FIGURE 2. USSR: LAYOUT AND ROOF COVERAGE OF ROCKET ENGINE TEST FACILITY NEAR VORONEZH.

Voronezh 1-3

25X1